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ANNUAL SUMMARY

BIRTHS, DEATHS, AND CAUSES OF DEATH

LONDON

AND OTHER LARGE TOWNS,

1894.

PUBLISHED BY THE AUTHORITY OF THE REGISTRAR GENERAL OF
BIRTHS, DEATHS, AND MARRIAGES IN ENGLAND.



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REGISTRATION LONDON.*

AREA.—The Area of Registration London is 77,389 acres or 121 square miles including 2717 acres of tidal water and foreshore; this is equal to 31,319 hectares, or 313 square kilometres. The Area of London being 121 square miles is equal to a square of 11 miles to the side. The length of the streets and roads in the County of London, as returned in 1882, was more than 1600 miles; and, from that date to the end of 1894, a total length of 192 miles of new streets had been sanctioned.

ELEVATION.—The population of London resides at a mean elevation of 60 feet (18·2 metres) above approximate mean water at Liverpool; the elevation varying from 1 foot (0·3 metre) in Plumstead Marshes, to 441 feet (134·4 metres) at Hampstead, above approximate mean water at Liverpool.

HOUSES.—At the Census in 1891 there were within this area 544,977 inhabited houses, containing an average of 7·7 persons to a house, a slightly lower proportion than in 1871 and 1881.

ANNUAL RATABLE VALUE.—The Annual Ratable Value of Property within Registration London in 1891, as assessed in accordance with the Valuation (Metropolis) Act, 1869, was 32,932,967*l*.† (For Annual Ratable Value of Greater London in 1891, see Table 9.)

DENSITY (1894).—144 persons to a hectare; 58·2 to an acre; 37,276 to a square mile. (In these calculations no account is taken of tidal water and foreshore.)

AVERAGE ANNUAL RATE OF INCREASE OF POPULATION

1861-71 . . .	1·015223
1871-81 . . .	1·016141
1881-91 . . .	1·009928

1894.

POPULATION	{ Males . . . 2,055,703 Females . . . 2,293,463 }	PERSONS. 4,349,166
(Estimated to the middle of the year.)		
MARRIAGES		36,902
PERSONS MARRIED		73,804
ANNUAL RATE OF PERSONS MARRIED PER 1000 OF THE POPULATION		17·0
BIRTHS	{ Males . . . 66,404 Females . . . 64,149 }	PERSONS. 130,553
ANNUAL RATE OF BIRTHS PER 1000 OF THE POPULATION		30·1
DEATHS	{ Males . . . 39,572 Females . . . 37,467 }	PERSONS. 77,039
ANNUAL RATE OF MORTALITY PER 1000	{ Males . . . 19·2 Females . . . 16·3 }	PERSONS. 17·8
EXCESS OF REGISTERED BIRTHS OVER DEATHS		53,514
ESTIMATED INCREASE OF POPULATION		42,967

* Registration London is co-extensive with the Administrative County of London except that the hamlet or civil parish of Penge is excluded from Registration London, although forming part of the County of London. The length of new streets and roads was supplied by H. de la Hooke, Esq., Clerk to the London County Council.

† This information is derived from a return of the Gross and Ratable Value of Property in the Metropolis issued by the London County Council.

ANNUAL SUMMARY.

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LONDON

AND OTHER LARGE TOWNS

1894.

*General Register Office, Somerset House,
12th February 1895.*

The 33 Great Towns.

In the middle of the year 1894 the thirty-three great towns of England and Wales contained a population estimated at 10,458,442. The births registered among this population in the course of the 52 weeks ending 29th December 1894 numbered 320,497, and were in the proportion of 30·7 in a calendar year per 1000 persons living. The deaths registered in the 52 weeks amounted to 188,995, and were equal to an annual rate of 18·1 per 1000 of the population.

The general death-rates in 1894, calculated without reference to sex or to age, varied considerably in the thirty-three great towns, ranging from 13·2 in Croydon to 23·8 in Liverpool. (Table 2, page xx).

It has been pointed out, however, in previous Annual Summaries that, in consequence of the great differences between one town and another with regard to the age and sex constitution of their respective populations, these *recorded* rates require correction before they can justly be used for purposes of comparison. In Table A. of the present Summary, factors are given by the use of which this correction can be made for each town with approximate accuracy. Applying these factors we have the corrected rates, which are given in the fourth column of the appended table. In the fifth column the death-rate for all England and Wales has been taken as 1,000, and the corrected rate in each town has been reduced to a figure comparable with that standard. The fifth column may be read as follows:—After making approximate correction for differences of age and sex constitution, the same number of lives that in the year 1894 gave 1000 deaths in England and Wales, gave 1181 in the thirty-three great English towns collectively, 829 in Croydon, 934 in Portsmouth, 958 in Leicester, &c. &c., 1395 in Manchester, 1423 in Salford, and 1595 in Liverpool.

TABLE A.—RECORDED and CORRECTED DEATH-RATES per 1000 Persons living in 33 Great Towns in 1894.

TOWNS, in the order of their Corrected Death-rates.	Standard Death-rate.*	Factor for Correction for Sex and Age Dis- tribution.†	Recorded Death-rate, 1894.	Corrected Death-rate, 1894.‡	Comparative Mortality Figure, 1894.§
Cols.	1.	2.	3.	4.	5.
England and Wales -	19·15	1·0000	16·59	16·59	1000
England and Wales, less the 33 Towns - }	19·45	0·9845	15·78	15·54	937
33 Towns - -	17·71	1·0813	18·12	19·59	1181
Croydon - - -	18·37	1·0424	13·19	13·75	829
Portsmouth - -	18·73	1·0224	15·15	15·49	934
Leicester - - -	17·64	1·0855	14·65	15·90	958
Derby - - -	17·36	1·1031	15·01	16·56	998
Brighton - - -	18·94	1·0110	16·41	16·59	1000
West Ham - - -	17·75	1·0788	16·17	17·44	1051
Plymouth - - -	19·70	0·9720	18·30	17·79	1072
Norwich - - -	19·99	0·9579	18·74	17·95	1082
Bristol - - -	18·33	1·0447	17·26	18·03	1087
Cardiff - - -	17·16	1·1159	16·22	18·10	1091
Hull - - -	18·23	1·0504	17·36	18·23	1099
Halifax - - -	17·20	1·1133	16·48	18·35	1106
Huddersfield -	16·47	1·1627	15·80	18·37	1107
Nottingham - -	17·81	1·0752	17·24	18·54	1118
Swansea - - -	17·53	1·0924	17·04	18·61	1122
London - - -	17·97	1·0656	17·76	18·93	1141
Gateshead - - -	17·83	1·0740	17·66	18·97	1143
Bradford - - -	16·73	1·1446	17·00	19·46	1173
Sheffield - - -	17·22	1·1120	17·77	19·76	1191
Leeds - - -	17·28	1·1082	17·87	19·80	1193
Birkenhead - -	17·42	1·0993	18·06	19·85	1197
Newcastle - -	17·58	1·0892	13·29	19·92	1201
Blackburn - -	17·05	1·1231	17·89	20·09	1211
Birmingham -	17·33	1·1050	18·59	20·54	1238
Bolton - - -	16·90	1·1331	18·79	21·29	1283
Oldham - - -	16·72	1·1453	18·61	21·31	1285
Burnley - - -	16·67	1·1487	18·70	21·48	1295
Wolverhampton -	18·30	1·0464	20·70	21·66	1306
Sunderland - -	18·25	1·0493	20·78	21·80	1314
Preston - - -	17·42	1·0993	20·81	22·88	1379
Manchester - -	16·90	1·1331	20·42	23·14	1395
Salford - - -	17·03	1·1244	21·00	23·61	1423
Liverpool - - -	17·26	1·1094	23·85	26·46	1595

* The Standard Death-rate signifies the death-rate at all ages calculated on the hypothesis that the rates at each of twelve age-periods in each town were the same as in England and Wales during the ten years 1881-90, the Death-rate at all ages in England and Wales during that period having been 19·15 per 1,000.

† The Factor for Correction is the figure by which the Recorded Death-rate should be multiplied in order to correct for variations of sex and age distribution.

‡ The Corrected Death-rate is the Recorded Death-rate multiplied by the Factor for Correction.

§ The Comparative Mortality Figure represents the Corrected Death-rate in each town compared with the Recorded Death-rate at all ages in England and Wales in 1894, taken as 1000.

Particulars of the mortality during 1894 in the thirty-three great towns are given in Tables 1 to 4.

Infantile mortality.—The 188,995 deaths at all ages, registered in the 33 great towns taken together, include 48,862 deaths of children during their first year of age. Infantile mortality, by which is meant the proportion of deaths under one year of age to registered births, was equal to 152 per 1000, as compared with an average rate of 166 in the ten years immediately preceding. Infantile mortality in 1894 was lowest (121) in Croydon, and next lowest (123) in Derby. It was highest in Preston, where the rate was equal to 217 per 1000 births.

In the thirty-three great towns collectively the death-rates from *small-pox*, *scarlet fever*, *whooping-cough*, *fever*, and *diarrhœa*, were in each case below the decennial average, but the mortality from *diphtheria* was again considerably in excess, and that from *measles* was slightly above the average.

There were 450 deaths in the thirty-three great towns from *small-pox*, of which 89 occurred in London or in the Metropolitan Asylum Hospitals outside the Metropolis, 49 in the neighbouring municipality of West Ham, 170 in Birmingham, 27 in Bradford, 23 in Manchester, 23 in Oldham, 20 in Liverpool, and 16 in Bristol, the remaining 33 being distributed over twelve other towns. The highest death-rate from *small-pox* was in Birmingham.

The mortality due to *measles* was equal to 0·63 per 1000 of the population, the average rate in the preceding ten years having been 0·62.

The mortality from *scarlet fever*, which had averaged 0·30 per 1000 in the preceding ten years, did not exceed 0·21 last year, the rates in the several towns ranging from 0·03 in Brighton and in Halifax, to 0·55 in Salford, and 0·63 in Wolverhampton.

The mortality from *diphtheria* was equal to 0·38 per 1000, as compared with 0·23, the average rate in the preceding ten years. The lowest rates were 0·05 in Derby, 0·06 in Plymouth, and 0·07 in Leicester, in Preston, and in Sunderland; the rates in the other towns rising to 0·46 in Cardiff, 0·61 in London, and 0·80 in West Ham. During the preceding year (1893) the mortality from diphtheria had been excessive in these three towns.

The mortality from *whooping-cough*, which had averaged 0·59 per 1000 in the preceding ten years, was 0·48 in the year under present notice. The rate in Leicester did not exceed 0·06 per 1000, but in the other towns the rates amounted to 0·81 in Swansea, 0·83 in Cardiff, and 0·89 in Plymouth.

The mortality from *continued fevers*, which had been equal to 0·24 per 1000 in the previous year, fell to 0·19 in the year 1894, and was 0·03 below the decennial average. The rate did not exceed 0·05 per 1000 in Cardiff and 0·06 in Croydon and in Halifax, whilst it ranged upwards to 0·59 in Liverpool and 0·60 in Sunderland.

The mortality from *diarrhœa* was 0·51 per 1000, against a decennial average of 0·91. The lowest rate from diarrhœa was 0·04 in Halifax (where also the "fever" rate was very low); the highest rates were 1·00 in Liverpool and 1·42 in Preston.

The highest aggregate rates from the seven zymotic diseases above enumerated were 3·19 in West Ham, 3·23 in Wolverhampton, 3·25 in Salford, and 3·41 in Liverpool.

Uncertified Causes of Death.—Of the 188,995 deaths registered in the 33 great towns, 3,276, or 1·7 per cent., were not certified either by a registered medical practitioner or by a coroner. Whilst in London the proportion of uncertified deaths did not exceed 0·8 per cent., it averaged 2·3 per cent. in the 32 provincial towns. As had also been the case in the two previous years, there was no uncertified death in Croydon during the year 1894. The proportion did not exceed 0·5 in Birkenhead, and 0·7 in Wolverhampton and in Derby; whilst in the other great towns the proportions ranged upwards to 4·2 in West Ham and in Hull, 4·8 in Preston, 4·9 in Halifax, and 5·1 in Birmingham.

LONDON.

MARRIAGES.

The marriages in London during the year numbered 36,902, and the proportion of persons married was 17·0 per 1000 of the population. The proportion had increased from 16·9 per 1000 in 1888 to 17·7 in 1891, since which year it has continuously declined, having been 17·4 in 1892, 17·2 in 1893, and 17·0 last year.

BIRTHS.

The births registered in the 52 weeks of the year numbered 130,553, and were in the proportion of 30·1 annually per 1000 of the estimated population. This is the lowest rate of birth for London in any year on record. The natural increment of the population, by excess of births over deaths, was 53,514, the average annual increment in the preceding five years having been 44,850.

DEATHS.

The deaths registered in the 52 weeks numbered 77,039, and corresponded to a rate of 17·8 annually per 1000 of the population. This rate was lower by 2·6 than the average rate in the previous ten years.

The 77,039 deaths include 1897 of Londoners which took place in certain metropolitan institutions outside the limits of Registration London, and also 1605 deaths of strangers who had been admitted into London Hospitals and Infirmaries from districts outside these boundaries. By excluding the deaths occurring in metropolitan institutions of persons ascertained to have been strangers the death-rate of London in 1894 is reduced to 17·4 per 1000.

Infantile Mortality.—The deaths of persons at all ages include those of 18,732 infants who had not completed their first year of life. These deaths are equal to a rate of 143 per 1000 children born, as compared with 154, the average rate in the preceding ten years. Infantile mortality was highest (158 per 1000) in the East group of sanitary areas, and lowest (131) in the North.

Causes of Death.—The following table shows, in a summary form, the amount of life saved and the amount lost in the year 1894, as compared with the preceding decennium, under each of the more important headings in the list of causes :—

TABLE B.—LONDON.—DIMINUTION OR EXCESS OF DEATHS in 1894, compared with the Average Annual Deaths in 1884–93, corrected for increase of Population.

CAUSE OF DEATH.	Diminution in 1894.	Excess in 1894.
Small-pox - - -	222	—
Measles - - -	—	659
Scarlet Fever - - -	143	—
Typhus - - -	11	—
Influenza - - -	—	34
Whooping-cough - - -	755	—
Diphtheria - - -	—	1,146
Simple Fever - - -	36	—
Enteric Fever - - -	23	—
Diarrhœal Diseases - - -	1,465	—
Cancer - - -	—	312
Phthisis and other Tubercular Diseases - - -	1,815	—
Premature Birth - - -	—	140
Diseases of Nervous System - - -	1,743	—
Diseases of Circulatory System - - -	835	—
Diseases of Respiratory System - - -	4,733	—
Diseases of Urinary System - - -	168	—
Childbirth and Puerperal Fever - - -	59	—
Accident - - -	84	—
Homicide - - -	16	—
Suicide - - -	—	47
All other Causes - - -	1,890	—
	13,998	2,338
Balance of Diminution or Excess - - -	11,660	—

The net gain in life saved during the year was represented by 11,660 lives. In other words, had the average death-rate in 1884–93 prevailed throughout the year 1894, 11,660 lives would have been sacrificed in addition to those which were actually lost by death. Notwithstanding this life saving, however, the table shows excessive mortality under headings which have shown considerable excess for many successive years past. Thus, for example, there was an excess of 1146 deaths under the head of diphtheria, of 312 under the head of cancer, and of 140 under the head of premature birth. In addition to these, there was also in 1894 an excess in the mortality from measles, and also a slight excess under the heads of influenza and suicide, as compared with the corrected averages.

The deaths referred directly to influenza in the year 1894 numbered 750, having been 2336 in 1891, 2264 in 1892, and 1526 in 1893. The deaths from diseases of

the respiratory system, which in the preceding four years had been largely in excess, were in the year 1894 below the average by 4733 deaths. The following table shows the deaths from influenza for each of the last five years registered in the several sanitary areas of London:—

TABLE C.—DEATHS FROM INFLUENZA registered in the METROPOLITAN SANITARY AREAS in the Five Years 1890 to 1894.

Sanitary Area.	1890.	1891.	1892.	1893.	1894.	Sanitary Area.	1890.	1891.	1892.	1893.	1894.
Paddington - -	45	67	79	64	30	Shoreditch - -	13	58	33	31	14
Kensington - -	38	112	158	94	33	Bethnal Green - -	22	102	56	41	13
Hammersmith - -	11	34	57	28	11	Whitechapel - -	4	49	52	33	13
Fulham - -	12	57	43	43	14	St. George-in-the-East - -	6	19	20	17	11
Chelsea - -	18	62	73	31	29	Linehouse - -	3	17	22	18	3
St. George Hanover Square - -	33	48	79	25	18	Mile End Old Town -	9	53	41	38	17
St. Margaret and St. John Westminster - -	8	21	19	20	11	Poplar - -	9	77	42	35	16
St. James Westminister - -	8	28	15	5	1	St. Saviour - -	4	7	13	3	-
St. Marylebone - -	33	74	75	68	31	St. George-the-Martyr Southwark -	5	16	13	9	7
Hampstead - -	8	46	31	53	21	Newington - -	9	63	33	30	12
St. Pancras - -	36	153	137	53	42	St. Olave - -	1	9	14	4	3
Islington - -	42	189	181	128	51	Bermondsey - -	2	39	40	17	9
Stoke Newington -	8	19	27	7	7	Rotherhithe - -	1	24	29	9	6
Hackney - -	22	113	84	66	37	Lambeth - -	50	135	140	85	47
St. Giles - -	6	28	24	16	23	Battersea - -	26	54	91	44	32
St. Martin-in-the-Fields - -	3	9	2	3	3	Wandsworth - -	34	70	91	57	37
Strand - -	4	9	6	3	1	Camberwell - -	34	133	124	82	40
Holborn - -	2	16	15	11	6	Greenwich - -	13	105	61	64	27
Clerkenwell - -	11	30	33	34	15	Lee - -	6	27	34	12	9
St. Luke - -	7	15	13	11	3	Lewisham (excluding Penge) - -	12	43	46	49	22
City of London -	15	21	27	17	4	Woolwich - -	2	19	12	9	5
						Plumstead - -	9	48	31	35	8

The deaths from *small-pox*, which had increased from 41 to 206 in the previous two years, again fell to 89 in the year 1894. Of these, 24 were stated to have been deaths of vaccinated, and 43 of unvaccinated persons, while, concerning the remaining 22 persons who died from small-pox, no information was obtainable as to their condition with regard to vaccination.

The deaths from *measles* numbered 3293, and were more by 1632 than the number registered in the preceding year. The death-rate from measles in 1894 was 0·76 per 1000 of the population, as compared with 0·61, the average rate in the preceding ten years.

Under the head of *scarlet fever* there were registered 962 deaths, which were equal to a rate of 0·22 per 1000, as compared with 0·26, the mean rate in the preceding decennium. Of the 962 deaths, 718 or 74·4 per cent., occurred in public institutions.

Diphtheria was the certified cause of 2670 deaths during the year under notice, corresponding to a rate of 0·61 per 1000 living; this rate was considerably lower

than that of the year 1893, but was nevertheless in excess of the decennial average by 0·26 per 1000. The mortality in London from diphtheria during the last five years, beginning with the year 1890, has been 0·33, 0·34, 0·46, 0·76, and 0·61 per 1000, respectively. The deaths last year from diphtheria and croup, taken together, amounted to 2836; these deaths, although fewer by 646 than the number registered in 1893, nevertheless exceeded by 796 the average number in the ten preceding years, corrected for increase of population. Table I. shows that, after distribution of the London institution deaths to the sanitary areas from which the patients originally came, it was in the Eastern group of these areas that diphtheria showed the greatest fatality in 1894, and the same is true of the nine years immediately preceding.

The following Table shows the deaths from *diphtheria* for each of the last eight years in the several sanitary areas of London, after distribution of the deaths in public institutions:—

TABLE D.—DEATHS FROM DIPHTHERIA in the METROPOLITAN SANITARY AREAS in the EIGHT YEARS 1887 to 1894, after Distribution of deaths occurring in Hospitals.

Sanitary Area.	Enumerated Population 1891.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.
Paddington	117,846	29	76	42	40	24	28	70	93
Kensington	166,308	40	91	111	34	28	34	83	77
Hammersmith	97,239	44	38	45	49	73	73	53	50
Fulham	91,639	19	10	13	22	19	31	64	105
Chelsea	96,253	19	14	24	56	16	39	52	52
St. George Hanover Square	78,864	13	46	30	13	20	26	34	19
St. Margaret and St. John Westminster	55,774	25	37	23	9	11	44	14	26
St. James Westminster	24,995	3	5	2	3	7	6	14	15
St. Marylebone	142,404	14	23	34	27	26	48	94	72
Hampstead	68,416	13	16	8	21	13	27	38	20
St. Pancras	234,379	62	72	62	132	71	107	201	118
Islington	319,143	46	50	63	81	158	150	200	221
Stoke Newington*	30,936	40	76	97	67	79	131	206	5 123
Hackney*	198,606								
St. Giles	39,782	23	11	17	10	12	21	22	14
St. Martin-in-the-Fields	14,616	5	3	2	1	4	12	8	6
Strand	25,217	10	3	8	4	5	8	22	9
Holborn	33,264	9	5	17	18	9	17	22	20
Clerkenwell	66,216	17	26	24	19	28	28	76	34
St. Luke	42,440	12	10	13	16	12	14	46	15
City of London	38,320	5	11	12	11	13	24	11	6
Shoreditch	124,009	27	32	69	58	65	44	137	75
Bethnal Green	129,132	27	52	102	116	61	117	136	133
Whitechapel	74,462	6	24	34	51	54	59	61	46
St. George-in-the-East	45,795	15	15	43	30	19	33	62	51

Note.—The population and deaths in places such as the Charterhouse, Gray's Inn, &c., which are not comprised in any of the above sanitary areas (note t, Table 3, p.16, Vol. II., Census Report, 1891) are nevertheless included in the totals relating to the areas with which these places are connected for registration purposes.

* See note to Table H.

Sanitary Area.	Enumerated Population 1891.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.
Limehouse - - - - -	57,876	14	25	47	28	16	25	61	51
Mile End Old Town - - -	107,592	22	20	53	44	37	81	80	81
Poplar - - - - -	166,748	30	42	64	70	55	78	168	108
St. Saviour - - - - -	27,177	8	13	12	5	11	6	17	20
St. George-the-Martyr South- work - - - - -	59,712	12	23	20	14	18	26	45	49
Newington - - - - -	115,804	27	18	55	32	44	38	93	61
St. Olave - - - - -	12,723	2	4	1	4	5	3	7	3
Bermondsey - - - - -	84,682	16	14	23	19	16	20	80	66
Rotherhithe - - - - -	39,255	6	8	16	8	4	11	31	31
Lambeth - - - - -	275,203	105	107	156	76	78	130	184	141
Battersea - - - - -	150,558	51	27	33	40	70	54	167	116
Wandsworth - - - - -	156,942		65	44	22	36	65	114	80
Camberwell - - - - -	235,344	65	64	70	51	47	78	130	192
Greenwich - - - - -	165,413	37	34	30	47	46	52	147	132
Lee* - - - - -	36,103	8	5	5	5	3	6	20	21
Lewisham (excluding Penge) -	72,272	11	31	5	15	8	20	53	30
Woolwich - - - - -	40,848	3	3	6	5	2	4	8	14
Plumstead* - - - - -	52,436	11	19	13	14	6	38	65	36

* See note to Table H. The figures for Lee and Plumstead for all the years relate to those sanitary areas as constituted on 25th March 1894.

The following Table shows the admissions into the Metropolitan Asylums Board Hospitals, the Highgate Small-pox Hospital, and the London Fever Hospital, together with the deaths therein, of small-pox, scarlet fever, diphtheria, and enteric fever patients during the ten years 1885-94:—

TABLE E.—LONDON.—ADMISSIONS AND DEATHS at the METROPOLITAN ASYLUMS BOARD HOSPITALS, the HIGHGATE SMALL-POX HOSPITAL, and the LONDON FEVER HOSPITAL, of Persons suffering from SMALL-POX, SCARLET FEVER, DIPHTHERIA, and ENTERIC FEVER, 1885-1894.

—	Small-pox.		Scarlet Fever.		Diphtheria.		Enteric Fever.	
	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.	Admissions.	Deaths.
1885	6713	1151	1661	137	21	4	244	38
1886	115	24	2092	156	27	4	361	52
1887	59	3	6662	516	18	4	458	62
1888	66	8	4881	514	111	50	461	73
1889	7	—	4837	370	740	278	311	42
1890	25	4	6991	521	965	317	518	95
1891	67	8	5601	360	1330	399	759	108
1892	366	38	13,686	850	2021	584	430	65
1893	2546	190	15,312	918	2853	866	544	110
1894	1226	107	11,892	725	3691	1041	538	96

The deaths from *whooping-cough* numbered 2097, and corresponded to a rate of 0·48 per 1000 of the population, as compared with 0·66, the average rate in the previous decennium.

Enteric fever caused 635 deaths, *typhus* 5, and *simple continued fever* 13 deaths. Thus, to continued fevers in the aggregate (the "fever" of these returns) 653 deaths were referred in the year 1894. These deaths corresponded to a rate of 0·15 per 1000 living, as compared with an average rate of 0·17 in the preceding decennium.

Diarrhæa caused 1780 deaths in the year 1894, which were in the proportion of 0·42 per 1000 living; this rate was lower than the average rate in the preceding ten years by 0·31 per 1000.

One death only was referred to *hydrophobia* in 1894, the average annual deaths in the preceding decennium having been seven. *Glanders* was the assigned cause of one death during the year.

Phthisis was the assigned cause of 7543 deaths in London during the year 1894, the average number in the preceding ten years, corrected for increase of population, having been 8653. The mortality from phthisis in Registration London was equal to 1·69 in each thousand of the population. After distribution of the deaths in public institutions, the rate was highest (2·58) in the Central group of sanitary areas, and next highest (2·00) in the East group, the South group and the West group showing the lowest rates, viz., 1·54 and 1·55 respectively. (Table I.)

The deaths in London ascribed to *violence* were 3147, as compared with 3200, the corrected decennial average. The deaths from *suicide* in the year under notice numbered 464, and were 47 in excess of the decennial average. The deaths from *homicide*, however, which were 58 in number, were below the average by 16.

Of the 2624 deaths from accident, 255 were caused by vehicles and horses in the streets, a number 20 below the corrected average. As mentioned in previous summaries, however, the deaths here specifically returned are probably far from representing the entire number actually caused by vehicles and horses in the streets.* The following table gives the numbers of deaths caused by the various descriptions of vehicles, the largest number, as usual, appearing under the heading "van, waggon, dray":

* Many deaths thus caused are registered under such indefinite headings as "fractures," &c.

TABLE F.—LONDON.—DEATHS caused by HORSES and VEHICLES in the STREETS,
1873-94.

Year.	Description of Vehicle, &c.								TOTAL.
	Horse, &c.	Carriage	Omnibus.	Tram-car.	Cab.	Cart.	Van, wagon, dray.	Others, and not described.	
1873	13	10	12	17	28	56	79	2	217
1874	28	11	17	14	33	36	67	5	211
1875	11	15	18	9	39	55	82	2	231
1876	13	4	17	12	24	56	84	7	217
1877	16	13	13	4	26	56	97	2	227
1878	17	12	14	10	34	63	84	3	237
1879	16	13	17	18	36	57	74	5	236
1880	12	11	20	17	39	43	76	2	220
1881	13	14	21	23	31	58	88	4	252
1882	12	15	19	23	37	60	100	5	271
1883	6	12	16	25	57	45	57	4	222
1884	12	11	33	18	57	51	74	9	265
1885	12	20	14	11	55	55	89	10	266
1886	10	7	21	9	39	49	111	5	251
1887	13	7	18	19	51	49	85	9	251
1888	5	15	25	9	41	47	91	4	237
1889	15	10	29	12	52	40	83	13	254
1890	3	11	22	18	43	44	109	20	270
1891	9	10	18	12	35	38	111	11	244
1892	17	15	26	11	44	47	101	8	269
1893	21	7	28	16	42	48	109	33	304
1894	17	10	24	13	35	46	86	24	255

Of the 2624 deaths at all ages attributed to *accident* or *negligence*, 508 were those of infants under one year of age who had been suffocated in bed, the numbers so returned in the preceding three years having been 608, 605, and 556. Of the 58 deaths from *homicide*, not fewer than 32 were those of infants under one year of age.

Deaths in Workhouses, Hospitals, and Public Lunatic and Imbecile Asylums.
—Of the 77,039 deaths registered in the 52 weeks of the year 1894, 22,117, or

28·7 per cent. took place in public institutions. The per-centages in the several classes of institutions were as follow :—

13·4 per cent. in workhouses and workhouse infirmaries.

2·7 " " in Metropolitan Asylum Hospitals.

10·3 " " in other hospitals.

2·3 " " in public lunatic and imbecile asylums.

Thus, in London, about one in every 7 deaths occurred in a workhouse or workhouse infirmary, one in 37 in a Metropolitan Asylum Hospital, one in 10 in some other hospital, and one in 43 in a public lunatic or imbecile asylum.

TABLE G.—LONDON.--DEATHS in PUBLIC INSTITUTIONS and PROPORTION of PAUPERISM, 1885-94.

	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.
Deaths in Public Institutions -	18,630	18,109	18,255	18,858	18,869	21,881	23,052	22,260	24,598	22,117
Metropolitan Asylum Board Hospitals (in and out of London) }	1,248	248	624	683	729	1,019	973	1,650	2,163	2,066
Other Hospitals - - - }	6,592	6,769	6,972	7,093	7,054	7,717	8,008	7,686	8,794	7,903
Lunatic and Imbecile Asylums* }	1,278	1,384	1,374	1,479	1,583	1,882	1,598	1,686	1,621	1,737
Workhouses and Workhouse Infirmaries† }	9,512	9,708	9,285	9,603	9,503	11,263	12,473	11,238	12,020	10,411
Proportion of persons in receipt of Poor Law Relief, per 1000 population										
In-door	13·6	13·6	13·9	14·1	14·0	13·7	13·5	13·7	14·2	14·5
Out-door	9·1	9·6	9·9	10·0	9·0	8·5	8·0	7·8	8·2	8·3

* Including the City of London, London County, and Metropolitan Lunatic and Imbecile Asylums situated outside Registration London.

† Including the Strand Union Workhouse at Edmonton, and the Holborn Union Workhouse at Mitcham.

In each of the last four years there has been an increase of deaths in the Metropolitan Asylum Hospitals, the numbers in the last four years having been severally 973, 1650, 2163, and 2066. Of the 2066 deaths in these institutions during 1894, 717 were those of scarlet fever patients, whilst 1034 were those of persons suffering from diphtheria, the latter being 169 in excess of the number in 1893.

Mortality in different parts of London.—The distribution of the registered mortality in London is seriously affected by the hospitals and other public institutions. In order, therefore, to give the means for a fair comparison between one district, or one group of districts, and another, the following Table has been constructed, in which the deaths in public institutions have been distributed to the sanitary areas from which the deceased had been admitted, and certain other corrections have been made as explained in the footnote to the Table.

TABLE H.—DEATHS BELONGING TO THE SEVERAL SANITARY AREAS OF REGISTRATION LONDON*
registered in the 52 WEEKS OF THE YEAR 1894.

SANITARY AREAS.	Total Deaths from all Causes.	Deaths from Principal Zymotic Diseases.								Deaths from Pthisis.	Deaths of Infants under 1 Year of Age.	Deaths under 1 Year to 1000 Births registered.	
		Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Typhus.	Enteric Fever.	Simple and ill-defined Fever.				Diarrhoea.
REGISTRATION LONDON	75,434	89	3,291	961	2,637	2,094	5	608	13	1,769	7,334	18,604	143
West.													
Paddington - - -	1,826	3	66	14	93	45	-	19	-	49	154	388	137
Kensington - - -	2,647	-	111	22	77	58	-	21	3	57	249	637	173
Hammersmith - -	1,712	-	71	14	50	59	-	15	-	47	161	426	147
Fulham - - - -	1,897	3	161	33	105	60	-	5	1	57	160	561	149
Chelsea - - - -	1,619	-	70	16	52	38	-	14	1	33	159	354	131
St. George Hanover Square -	1,038	1	31	11	19	21	-	12	-	10	97	172	115
St. Margaret and St. John Westminster.	991	-	35	7	26	21	-	5	-	14	137	170	138
St. James Westminster -	393	1	13	3	15	7	-	8	-	5	46	67	144
North.													
St. Marylebone - - -	2,662	29	88	40	72	40	-	23	-	35	274	558	130
Hampstead - - -	798	3	31	10	20	26	-	6	1	8	71	167	113
St. Pancras - - -	4,256	8	95	51	118	115	1	38	-	84	454	1,012	145
Islington - - - -	5,236	3	204	69	221	195	-	36	-	119	502	1,232	130
Stoke Newington *	332	-	2	6	5	8	-	3	-	5	42	65	86
Hackney *	3,243	1	186	57	123	68	-	33	-	82	295	769	127
Central.													
St. Giles - - - -	757	1	15	2	14	27	-	8	-	11	119	141	132
St. Martin-in-the Fields	266	-	9	1	6	5	-	2	-	4	35	49	210
Strand - - - - -	524	-	16	1	9	21	-	7	-	8	74	98	179
Holborn - - - - -	660	-	23	-	20	21	-	7	-	10	77	150	180
Clerkenwell - - -	1,243	-	49	10	34	38	-	8	-	35	151	316	145
St. Luke - - - -	965	1	14	10	15	18	-	3	-	26	116	232	123
City of London - -	679	-	3	9	6	11	-	6	-	4	68	84	160
East.													
Shoreditch - - -	2,450	2	69	28	75	93	1	12	-	70	265	694	160
Bethnal Green - -	2,642	5	135	27	133	70	-	27	-	60	238	699	151
Whitechapel - - -	1,613	-	66	23	46	52	-	10	-	34	193	491	154
St. George-in-the-East	1,196	-	49	13	51	41	-	6	-	59	102	347	185
Limehouse - - - -	1,403	1	93	33	51	27	-	8	-	31	136	331	174
Mile End Old Town -	2,281	4	157	37	81	74	-	13	2	70	197	629	156
Poplar - - - - -	3,225	10	214	40	108	77	-	31	1	65	282	887	153
South.													
St. Saviour - - -	560	-	46	6	20	9	-	2	-	4	77	112	145
St. George the-Martyr South-wark.	1,334	-	80	17	49	27	-	5	-	39	165	385	186
Newington - - - -	2,369	2	103	19	61	75	-	14	-	53	231	664	168
St. Olave - - - -	268	-	19	4	3	7	-	-	-	3	32	55	128
Bermondsey - - -	1,734	1	79	23	66	51	1	16	-	42	188	451	146
Rotherhithe - - -	764	-	41	15	31	13	-	2	-	32	66	218	161
Lambeth - - - - -	4,345	1	181	64	141	109	-	46	-	134	447	1,225	133
Battersea - - - -	2,573	2	151	32	116	75	-	28	1	88	219	734	146
Wandsworth - - -	2,234	-	75	20	80	55	-	21	2	64	188	506	114
Camberwell - - -	4,045	2	186	46	192	137	1	22	-	101	347	1,096	148
Greenwich - - - -	2,976	-	144	59	132	112	-	32	1	60	240	743	138
Lee* - - - - -	472	2	11	7	21	11	1	3	-	8	42	75	94
Lewisham (excluding Penge)	1,097	-	39	12	30	35	-	14	-	24	90	262	128
Woolwich - - - -	753	1	39	22	14	12	-	6	-	16	82	173	136
Plumstead *	736	2	21	23	36	30	-	6	-	6	66	179	94

In the above Table all deaths of persons in, or on the way to, Hospitals and other Public Institutions, as well as those of persons under treatment in surgical homes, or dying by accident or otherwise in the streets, have been distributed, as far as practicable, to the sanitary areas in which the deceased had previously resided. The deaths of 1,897 London residents who died outside Registration London in the Strand Union Workhouse at Edmonton, the Holborn Union Workhouse at Mitcham, the City of London Lunatic Asylum at Stone, and the Metropolitan Hospitals and Asylums have been similarly distributed. In 1,605 cases the previous residence was outside Registration London, and these have been excluded from the Table.

* The parish of Stoke Newington, separated from Hackney sanitary area, and the parish of Plumstead, separated from Plumstead sanitary area, were constituted separate sanitary areas on 25th March 1894. The figures for each of the areas affected are shown as though the change had taken place at the beginning of the year.

Taking the figures in this Table as a basis, and assuming that the population of each of the five groups of Sanitary Areas has increased or decreased since 1891 at the same ratio as between the censuses of 1881 and 1891, the following results are obtained.

TABLE I.—LONDON.—BIRTH and DEATH-RATES in GROUPS of SANITARY AREAS during 1894; and the AVERAGE ANNUAL RATES in the nine Years 1885-1893.

GROUPS OF SANITARY AREAS.		PER 1000 PERSONS LIVING.													Deaths under 1 Year to 1000 Births registered.
		BIRTHS.	Deaths from												
			ALL CAUSES.	Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Typhus.	Enteric Fever.	Ill-Simple and Defined Fever.	Diarrhoea.	Phthisis.	
REGISTRATION LONDON	1894 -	30'1	17'4	2'64	0'02	0'76	0'22	0'61	0'48	0'00	0'14	0'00	0'41	1'69	143
	1885-93 -	32'0	20'1	2'75	0'04	0'61	0'24	0'36	0'64	0'00	0'14	0'01	0'71	?	154
West Group	1894 -	25'4	16'2	2'40	0'01	0'74	0'16	0'58	0'41	-	0'13	0'01	0'36	1'55	145
	1885-93 -	27'3	18'6	2'39	0'02	0'51	0'18	0'34	0'54	0'00	0'12	0'01	0'67	?	157
North "	1894 -	28'5	16'2	2'32	0'04	0'59	0'23	0'55	0'44	0'00	0'14	0'00	0'33	1'60	131
	1885-93 -	30'3	18'8	2'50	0'04	0'56	0'19	0'34	0'58	0'00	0'14	0'01	0'64	?	146
Central "	1894 -	29'3	20'6	2'21	0'01	0'52	0'13	0'42	0'57	-	0'17	-	0'39	2'58	147
	1885-93 -	30'0	24'5	2'88	0'04	0'72	0'25	0'35	0'61	0'00	0'15	0'01	0'75	?	169
East "	1894 -	36'4	20'9	3'52	0'03	1'11	0'29	0'77	0'61	0'00	0'15	0'00	0'56	2'00	158
	1885-93 -	37'4	23'2	3'58	0'05	0'82	0'36	0'45	0'80	0'00	0'18	0'01	0'91	?	163
South "	1894 -	30'7	16'7	2'64	0'01	0'76	0'23	0'62	0'47	0'00	0'13	0'00	0'42	1'54	139
	1885-93 -	33'1	19'4	2'68	0'05	0'57	0'24	0'33	0'66	0'00	0'12	0'01	0'70	?	149

In this Table 0'00 indicates that the deaths were too few to give a rate of 0'005; when no death occurred, - is inserted.

Note.—The deaths in Metropolitan Hospitals and in other Metropolitan Institutions, whether situated within Registration London or outside its limits, have been distributed to the Sanitary Areas to which the deceased persons properly belonged. (See note to Table H.)

Uncertified Causes of Death.—Of the 77,039 deaths registered in London, 651, or 0'8 per cent., were not certified either by a medical practitioner or by a coroner (Tables 1 and 2); this proportion is lower than any recorded in previous years.

GREATER LONDON.—The estimated population of Greater London, which is co-extensive with the Metropolitan and City Police Districts, was 5,948,300 in the middle of the year 1894, including 4,349,166 in Inner or Registration London, and 1,599,134 in the Outer Ring. The mortality among the population of the entire area was 16'5 per 1000, the rates in the preceding three years having been 19'8, 19'3, and 19'7. In Inner, or Registration, London, the mortality was 17'8, while in the Outer Ring it was not more than 13'0. Infant mortality in Greater London was at the rate of 138 per 1,000 births, as compared with 147,150, and 158 per 1000, in the three preceding years. The proportions in Inner London and in the Outer Ring differed considerably, as usual, being 143 in the former and 123 in the latter.

The Sixty-seven other Large Towns.

In the year 1894, the 67 English and Welsh towns included in Table 5 contained a population which is estimated to have numbered 3,567,001 in the middle of the year. The births registered amongst this population in the course of the 52 weeks of the year numbered 108,804, and were in the proportion of 30·5 per 1000 persons living. The registered deaths during the same period amounted to 57,202, and corresponded to a rate of 16·0 per 1000 persons living.

The general death-rate in 1894, calculated without reference either to sex or to age, varied considerably in the several towns, ranging from 9·5 in Hornsey and 10·0 in Bournemouth to 22·0 in Longton and 22·1 in Dudley.

Particulars of the mortality during 1894 in the 67 towns here referred to are given in Tables 5 and 6.

Infantile mortality.—The 57,202 deaths at all ages registered in the 67 towns taken together include 15,609 deaths of children under one year of age. Infantile mortality, or the proportion of deaths under one year to registered births, was, therefore, equal to 143 per 1000. The rates were lowest, 92 per 1000 in Dover, and 94 in Bournemouth, whilst they were as high as 192 in Stockport, and 236 in Longton.

There were 77 deaths from *small-pox* during last year in the 67 towns now under notice, including 15 in Aston Manor, 10 in Walsall, 9 in Smethwick, 7 in Dudley, and 6 in St. George and in Bury.

The mean rate of mortality from *measles* was equal to 0·32 per 1000, the proportion reaching 1·34 in Exeter and 1·56 in Dudley.

The mortality from *scarlet fever* was equal to 0·16 per 1000, on the average, the rates in the several towns ranging from 0·01 in Walsall, to 0·70 in Bootle, and 0·76 in Warrington.

The mortality from *diphtheria* averaged 0·19 per 1000, and ranged from the lowest 0·2 in Lincoln to 0·54 in Walthamstow, and 0·55 in Rochdale.

From *whooping-cough* the mortality in the 67 towns was equal to 0·39 in the aggregate, the rate varying from 0·02 in Eastbourne to 1·57 in St. George.

The mortality from "*fever*," which averaged 0·20 in the 67 towns, ranged from 0·02 in Aberdare and 0·03 in Carlisle, to 0·59 in Bury and 0·63 in Bootle.

Diarrhæa caused an average death-rate of 0·40 per 1000; the lowest rate being 0·03 in Southport, and the highest 1·11 in Stockport.

The highest rates from the seven principal zymotic diseases in the aggregate, were 3·60 in Dudley and 3·85 in Exeter, the lowest rates being 0·46 in Bournemouth, and 0·35 in Dover.

Edinburgh, Glasgow, and Dublin.

The death-rate in Edinburgh in 1894 was 17·5 per 1000 population, against 17·8 in London. In Glasgow the rate was 19·8, whilst in Dublin it reached 24·8. *Small-pox* caused 56 deaths in Edinburgh, 5 in Glasgow, and 68 in Dublin. In Glasgow the death-rate from *whooping-cough* was 0·9 per 1000 living, and in Dublin the rate from "*fever*" was 0·5.

Colonial and Foreign Cities.

From Weekly and other Returns with which the Registrar-General is favoured by the Authorities of 37 of the principal Foreign and Colonial cities, with an aggregate population exceeding twenty-two millions, it is found that the deaths last year in these cities collectively were equal to a rate of 23·1 per 1000 living.

In thirty-two European, American, and Australian cities, with an aggregate population of more than 19,750,000, the rate was 21·5 per 1000. In these thirty-two cities the lowest death-rates were 12·5 in Brisbane, 14·2 in Sydney, 16·1 in St. Louis, 16·9 in The Hague, 18·0 in Hamburg, and 18·1 in Brussels; the rates in the other cities ranging upwards to 27·1 in Prague, 30·2 in Trieste, 31·4 in St. Petersburg, and 34·2 in Moscow. In Paris the rate was 20·3, in Berlin 18·2, and in Vienna 22·8, against 17·8 in London. *Small-pox* caused 314 deaths in Rotterdam, 173 in Paris, 156 in New York, 104 in Moscow, 99 in St. Petersburg, and 79 in Buda-Pesth. The mortality from *measles* was high in Prague, St. Petersburg, Christiania, Vienna, and Turin; that from *scarlet fever* in Trieste, Copenhagen, and St. Petersburg; that from *diphtheria* in St. Petersburg, Moscow, Stockholm, Copenhagen, Christiania, and in most of the German, Austrian, and American cities from which returns are received; and that from "*fever*" in New Orleans, St. Louis, Baltimore, Prague, and in Rome (where nearly half the deaths from "*fever*" were stated to have been caused by *malarial fever*). The mortality from *diarrhæal diseases* (including *cholera*) was especially high in St. Petersburg, Moscow, Breslau, and Munich, whilst it was considerable in many other of these thirty-two towns.

Among the Indian cities the highest death-rate was 36·7 in Madras, the rates in Calcutta and Bombay being 29·8 and 33·3 respectively. *Small-pox* caused 529 deaths in Bombay, 323 in Calcutta, and 12 in Madras; and *measles* caused 785 deaths in Bombay, and 194 in Madras. The mortality from "*fever*" was, as usual, excessive in all these cities, and that from *diarrhæal diseases* was high in Calcutta and Madras.

In Cairo and Alexandria the death-rates were respectively 52·0 and 40·6, these high rates being mainly attributable to excessive mortality from *diarrhæal diseases*, which caused nearly one-third of the total deaths in Cairo, and one-fourth of those in Alexandria.

TABLE 1.—33 Towns.—Population; Births, Deaths, and Meteorology, in the 52 Weeks of 1894.

CITIES AND BOROUGH.	POPULATION, Estimated to the middle of 1894.*	Persons to an Acre.	BIRTHS.	DEATHS.	Deaths of				Deaths from										Inquest Cases.	Deaths in Public Institutions.	Unidentified Causes of Death.	MEAN TEMPERATURE. (Inches).	RAIN- FALL (Inches).	CITIES AND BOROUGH.
					Deaths of				Deaths from															
					Infants under 1 Year of Age.	Persons aged 60 Years and upwards.	Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping- cough.	Fever.	Diarrhoea.	Violence.									
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	Cols.				
33 TOWNS	10,458,442	34.9	320,487	188,995	48,862	40,530	25,412	450	65,633	39,799	5,033	19,977	5,223	71,244	13,861	38,900	3,276	48.5	30.12	- 33 TOWNS.				
LONDON†	4,340,166	58.2	130,553	77,039	18,732	17,212	11,544	89	32,933	9,822	2,670	2,007	633	1,780	3,147	6,663	22,117	651	49.9	29.88	LONDON†			
WEST HAM	238,184	50.6	8,067	3,841	1,113	638	758	49	229	36	190	101	45	108	122	174	416	162	-	WEST HAM.				
CRYDON	111,921	12.4	2,783	1,472	338	482	172	-	40	8	32	62	7	23	31	101	208	27	48.8	31.79	CRYDON.			
BRIGHTON	118,715	46.9	3,055	1,943	422	606	143	-	38	4	26	14	11	52	55	100	361	27	50.5	32.21	BRIGHTON.			
PORTSMOUTH	170,973	39.6	4,709	2,584	619	698	332	4	138	15	33	41	27	74	81	160	386	21	49.8	36.27	PORTSMOUTH.			
PLYMOUTH	87,931	57.1	2,528	1,005	427	475	139	4	3	8	5	78	11	23	45	104	146	18	40.65	36.27	PLYMOUTH.			
BRISTOL	226,578	50.8	6,873	3,900	953	1,082	461	16	114	16	48	176	22	69	125	277	776	52	48.1	40.65	BRISTOL.			
CARDIFF	148,890	24.6	5,103	2,408	722	394	288	1	11	8	69	123	8	68	121	216	263	28	-	CARDIFF.				
SWANSEA	95,389	18.8	3,069	1,621	469	380	168	-	26	23	10	77	12	30	37	90	91	18	-	SWANSEA.				
WOLVERHAMPTON	85,036	24.1	2,889	1,755	479	397	274	5	72	53	35	28	17	64	52	120	304	12	46.4	23.88	WOLVERHAMPTON.			
BIRMINGHAM	492,301	38.7	15,662	9,125	2,541	1,811	1,225	170	327	76	75	214	106	257	343	264	1,748	467	48.2	26.39	BIRMINGHAM.			
NORWICH	106,645	14.0	3,137	1,974	516	688	159	-	22	15	18	38	23	43	40	134	237	33	-	NORWICH.				
LEICESTER	189,136	22.0	5,034	2,764	963	572	365	-	106	30	13	12	28	176	80	189	332	85	-	LEICESTER.				
NOTTINGHAM	223,584	20.4	6,881	3,844	1,110	882	520	3	184	51	18	118	62	134	125	230	517	50	48.9	20.25	NOTTINGHAM.			
DERBY	98,796	28.6	2,890	1,479	356	394	160	-	64	15	5	16	26	34	69	150	192	11	-	DERBY.				
BIRKENHEAD	105,627	30.3	3,223	1,902	460	414	278	1	92	12	41	67	17	48	51	144	226	9	-	BIRKENHEAD.				
LIVERPOOL	507,230	97.3	17,893	12,062	3,210	18,46	1,726	20	289	229	97	276	297	508	635	893	2,656	425	48.9	27.91	LIVERPOOL.			
BOLTON	118,393	50.2	3,721	2,217	602	433	215	-	21	9	10	59	26	90	68	156	206	20	-	BOLTON.				
MANCHESTER	520,211	136.08	16,060	10,592	2,910	2,122	1,335	23	224	113	146	287	96	346	437	849	2,361	141	-	MANCHESTER.				
SALFORD	296,828	39.8	7,041	4,310	1,255	720	367	2	146	112	113	146	63	141	152	258	717	121	-	SALFORD.				
OLDHAM	138,755	29.3	3,762	2,575	606	506	255	23	56	21	39	57	15	44	69	165	265	21	-	OLDHAM.				
BURNLEY	96,478	24.6	3,069	1,799	527	301	237	-	36	51	29	17	27	77	58	90	134	32	-	BURNLEY.				
BLACKBURN	125,797	18.0	3,817	2,244	610	484	201	-	13	9	18	42	33	86	71	107	202	80	-	BLACKBURN.				
PRESTON	111,425	27.2	3,566	2,312	774	486	290	1	37	12	8	46	29	137	55	171	111	-	-	PRESTON.				
Huddersfield	98,511	8.3	1,988	1,552	318	386	142	-	13	23	22	54	12	18	39	51	137	52	-	Huddersfield.				
HALIFAX	92,361	10.9	2,142	1,526	289	465	81	-	4	3	12	19	6	4	42	75	170	75	46.3	37.40	HALIFAX.			
BRADFORD	223,985	20.8	5,961	3,797	862	602	394	27	115	72	17	68	30	65	121	255	467	35	48.0	33.78	BRADFORD.			
LEEDS	388,761	18.0	12,502	6,927	1,740	1,431	776	3	290	52	73	131	52	175	241	603	762	67	48.5	28.10	LEEDS.			
SHEFFIELD	335,316	17.2	11,267	5,994	1,666	1,145	765	-	165	40	66	239	61	191	178	314	718	216	-	SHEFFIELD.				
HULL	212,679	25.9	6,808	3,683	973	845	373	3	93	39	29	9	82	113	157	222	526	154	47.7	26.99	HULL.			
SUNDERLAND	136,101	47.5	4,768	2,821	797	514	415	-	116	25	9	70	82	113	90	217	313	29	-	SUNDERLAND.				
GATEHEAD	23,372	29.7	3,180	1,644	484	312	219	1	93	6	21	23	44	44	112	97	15	-	-	GATEHEAD.				
NEWCASTLE	205,347	37.6	6,250	3,684	979	717	435	-	96	29	32	154	27	97	143	310	561	37	-	NEWCASTLE.				

* By "estimated" population is meant the number of persons who would be living if the mean rate of increase between 1881 and 1891 had been maintained since the latter date.
† Including Deaths of Londoners in the Metropolitan Workhouses, Hospitals, and Lunatic Asylums situated outside Registration London, but excluding deaths of persons not belonging to London occurring in the Highgate Small-pox Hospital, in the London Fever Hospital, in the Middlesex County Lunatic Asylum at Wandsworth, and in the Metropolitan Asylums Board Hospitals within Registration London. The provincial towns have been similarly corrected.

TABLE 2.—33 Towns.—Birth-, and Death-rates, and Analysis of Mortality, in the 52 Weeks of 1894.

In this Table, 0·00 indicates that the deaths were too few to give a rate of 0·000; when no death occurred, — is inserted.

CITIES AND BOROUGHES.	ANNUAL RATES PER 1000 PERSONS LIVING.										PERCENTAGE to Total Deaths,				CITIES AND BOROUGHES.						
	Total Deaths.					Deaths from					Inquest Cases.	Deaths in Public Institutions.	Unidentified Causes of Death.								
	Deaths from																				
	Births in 52 or 53 Weeks ending 25th Dec. 1894.	31st Dec. 1892.	30th Dec. 1893.	29th Dec. 1894.	Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping- cough.				Fever.		Diarthra.	Violence.				
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.	19.	20.	Cols.	
33 TOWNS.	30·7	22·2	20·7	21·6	18·1	2·44	0·04	0·63	0·21	0·38	0·48	0·19	0·51	0·68	152	10·5	64·6	7·3	20·6	1·7	- 33 TOWNS.
LONDON*.	30·1	21·4	20·6	21·3	17·8	2·66	0·02	0·76	0·22	0·61	0·48	0·15	0·42	0·73	143	10·4	61·9	8·6	28·7	0·8	LONDON*.
WEST HAM.	34·0	17·8	18·6	18·9	16·2	3·19	0·21	0·66	0·17	0·80	0·53	0·19	0·40	0·51	138	9·4	61·9	4·5	10·8	4·2	WEST HAM.
OXFORD.	25·0	14·5	15·8	16·3	13·2	1·94	—	0·36	0·07	0·29	0·56	0·06	0·20	0·28	121	8·7	57·5	6·9	14·1	—	OXFORD.
BRIGHTON.	25·8	18·2	19·2	18·4	16·4	1·21	—	0·30	0·08	0·22	0·12	0·09	0·44	0·46	138	8·7	50·2	5·1	18·6	1·4	BRIGHTON.
PLYMOUTH.	27·6	19·0	18·5	18·2	15·2	1·95	0·02	0·81	0·09	0·29	0·24	0·16	0·44	0·48	131	8·2	56·1	6·2	14·9	0·8	PLYMOUTH.
PORTSMOUTH.	28·8	22·5	20·9	18·5	18·3	1·59	0·06	0·83	0·09	0·06	0·13	0·33	—	—	169	9·1	58·9	6·5	9·1	1·2	PORTSMOUTH.
BRISTOL.	28·2	22·1	18·8	18·9	17·3	2·04	0·07	0·50	0·07	0·21	0·78	0·10	0·31	0·55	141	9·4	59·1	7·1	13·0	1·3	BRISTOL.
CARDIFF.	33·6	22·1	18·8	18·7	16·3	1·94	—	0·07	0·25	0·46	0·83	0·05	0·47	0·89	140	9·4	59·1	14·0	14·0	1·3	CARDIFF.
SWANSEA.	32·3	22·0	20·4	19·6	17·0	1·77	—	0·27	0·09	0·11	0·81	0·13	0·21	0·89	163	9·1	65·3	5·6	5·6	1·1	SWANSEA.
WOLVERHAMPTON.	34·1	24·2	21·5	20·7	17·7	3·23	0·06	0·85	0·63	0·41	0·33	0·20	0·75	0·61	166	11·5	69·1	6·8	17·3	0·7	WOLVERHAMPTON.
BIRMINGHAM.	31·7	22·2	20·4	22·0	18·6	2·50	0·35	0·67	0·15	0·15	0·44	0·22	0·52	0·70	163	10·6	66·0	6·8	19·2	5·1	BIRMINGHAM.
NORWICH.	29·8	19·3	20·0	19·3	18·7	1·51	—	0·21	0·14	0·17	0·36	0·24	0·41	0·38	164	8·8	67·1	6·8	12·0	1·7	NORWICH.
LEICESTER.	31·5	21·7	18·2	20·0	14·7	1·94	—	0·56	0·16	0·07	0·63	0·15	0·94	0·42	162	7·1	52·3	6·0	14·2	3·1	LEICESTER.
NOTTINGHAM.	28·6	19·9	18·7	18·5	17·2	2·33	0·01	0·60	0·23	0·08	0·53	0·28	0·60	0·56	174	9·1	59·8	8·0	14·2	1·3	NOTTINGHAM.
DERBY.	29·3	19·1	18·3	18·2	15·0	1·63	—	0·65	0·15	0·05	0·16	0·26	0·35	0·70	123	8·1	70·4	10·1	13·0	0·7	DERBY.
BIRKENHEAD.	30·5	20·9	19·6	20·5	18·1	2·64	0·01	0·87	0·11	0·39	0·64	0·16	0·46	0·45	143	10·6	72·0	7·6	11·9	0·5	BIRKENHEAD.
LIVERPOOL.	35·4	27·0	24·7	27·3	23·8	3·41	0·04	0·87	0·45	0·19	0·55	0·59	1·00	1·26	179	15·1	68·7	7·4	22·0	8·5	LIVERPOOL.
ROTON.	31·5	21·9	22·8	24·1	18·8	1·82	—	0·18	0·08	0·08	0·50	0·22	0·76	0·74	162	10·9	72·7	8·0	9·3	0·9	ROTON.
MANCHESTER.	32·0	26·5	25·8	24·9	20·4	2·38	0·04	0·48	0·22	0·28	0·55	0·19	0·67	0·84	160	12·4	77·3	7·0	9·3	1·3	MANCHESTER.
SALFORD.	34·3	26·0	24·6	24·1	21·0	3·25	0·01	0·71	0·55	0·31	0·68	0·31	0·68	0·74	174	12·5	74·0	8·0	16·6	2·8	SALFORD.
OLDHAM.	27·2	25·7	22·0	21·0	18·6	1·84	0·17	0·40	0·15	0·28	0·41	0·11	0·32	0·50	161	11·5	70·6	6·4	19·3	0·8	OLDHAM.
BURNLEY.	32·9	21·6	20·4	21·9	18·7	2·46	—	0·37	0·53	0·30	0·38	0·18	0·98	0·80	170	10·9	69·8	5·0	7·4	1·8	BURNLEY.
BLACKBURN.	28·8	25·8	21·7	23·3	17·9	1·60	—	0·10	0·07	0·14	0·33	0·26	0·70	0·67	169	10·0	74·8	4·8	9·0	3·6	BLACKBURN.
PRESTON.	32·1	27·3	24·1	26·4	20·8	2·61	0·01	0·33	0·11	0·07	0·41	0·36	1·42	0·50	217	10·3	76·3	2·9	7·7	4·8	PRESTON.
HUDERSFIELD.	20·2	23·0	18·1	17·2	15·8	1·45	—	0·13	0·23	0·22	0·55	0·12	0·20	0·40	160	9·3	65·7	3·3	8·2	3·4	HUDERSFIELD.
HALIFAX.	23·1	22·8	19·5	17·4	16·5	0·87	0·04	0·38	0·03	0·13	0·21	0·06	0·04	0·45	135	9·3	73·0	4·9	11·1	4·9	HALIFAX.
BRADFORD.	26·7	22·2	19·0	21·0	17·0	1·76	0·12	0·51	0·32	0·08	0·30	0·13	0·30	0·54	145	9·9	71·3	6·7	13·1	0·9	BRADFORD.
LEEDS.	32·2	22·9	19·8	22·3	17·9	2·00	0·01	0·75	0·13	0·19	0·84	0·13	0·45	0·62	155	10·0	63·2	8·7	11·0	1·0	LEEDS.
SHEFFIELD.	33·4	23·9	20·8	22·3	17·8	2·27	0·01	0·40	0·12	0·20	0·71	0·19	0·56	0·53	157	9·9	65·5	5·2	13·0	3·6	SHEFFIELD.
HULL.	32·4	21·0	19·6	21·8	17·4	1·76	0·01	0·43	0·18	0·14	0·38	0·10	0·44	0·74	142	9·7	65·9	8·0	14·3	4·2	HULL.
SUNDERLAND.	35·1	25·0	20·9	22·5	20·8	3·06	—	0·85	0·10	0·07	0·52	0·60	0·84	0·66	167	12·2	66·0	7·7	11·1	1·0	SUNDERLAND.
GATESHEAD.	34·2	23·1	18·9	19·3	17·7	2·35	0·01	1·00	0·06	0·23	0·53	0·25	0·47	0·47	152	9·9	65·9	6·8	5·9	0·9	GATESHEAD.
NEWCASTLE.	31·0	23·8	19·7	21·0	18·3	2·16	—	0·48	0·14	0·16	0·76	0·13	0·49	0·71	157	10·7	68·9	8·4	15·2	1·0	NEWCASTLE.

* See note (f) to Table 1.

TABLE 3.—33 Towns.—Death-rates per 1,000 living from All Causes, and from the Principal Zymotic Diseases, and Infant Mortality, in the Ten Years 1884-93, and in 1894.

In this Table 0·00 indicates that the deaths were too few to give a rate of 0·005; when no death occurred, — is inserted.

CITIES AND BOROUGHES.	ALL CAUSES.		SMALL-POX.		MEASLES.		SCARLET FEVER.		DIPHTHERIA.		WHOOPING- COUGH.		FEVER.		DIARRHŒA.		DEATHS UNDER ONE YEAR-TO 1000 BIRTHS.		CITIES AND BOROUGHES.
	Ten years 1884-93.	1894.	Ten years 1884-93.	1894.	Ten years 1884-93.	1894.	Ten years 1884-93.	1894.	Ten years 1884-93.	1894.	Ten years 1884-93.	1894.	Ten years 1884-93.	1894.	Ten years 1884-93.	1894.			
33 TOWNS.	21·3	18·1	0·06	0·04	0·62	0·63	0·30	0·21	0·23	0·38	0·59	0·48	0·22	0·19	0·31	0·51	186	152	33 TOWNS.
LONDON* WEST HAM. CRYDON BRIGHTON PORTSMOUTH PLYMOUTH BRISTOL CARDIFF SWANSEA.	20·4 19·3 15·1 18·0 18·6 21·6 19·5 21·0 20·3	17·8 16·2 13·2 16·4 15·2 17·3 16·2 17·0	0·07 0·47 0·06 0·00 0·00 0·06 0·03 0·00	0·02 0·21 — — 0·02 0·06 0·07 0·01	0·61 0·57 0·41 0·35 0·53 0·54 0·70 0·61	0·76 0·96 0·36 0·81 0·03 0·50 0·07 0·27	0·26 0·27 0·08 0·11 0·09 0·52 0·27 0·35 0·60	0·22 0·15 0·03 0·03 0·09 0·09 0·07 0·05 0·24	0·35 0·28 0·20 0·18 0·25 0·16 0·11 0·21 0·46 0·06	0·61 0·80 0·74 0·29 0·22 0·34 0·46 0·52 0·11	0·66 0·74 0·44 0·40 0·24 0·89 0·78 0·51 0·49 0·52	0·48 0·43 0·56 0·56 0·12 0·89 0·78 0·83 0·81	0·17 0·24 0·11 0·13 0·39 0·26 0·13 0·29 0·34	0·15 0·09 0·09 0·09 0·16 0·10 0·05 0·13	0·73 0·86 0·85 0·83 0·83 0·86 0·81 0·83 0·43	0·42 0·45 0·20 0·44 0·44 0·31 0·41 0·21	154 188 155 153 144 163 150 164 163	LONDON* WEST HAM. CRYDON BRIGHTON PORTSMOUTH PLYMOUTH BRISTOL CARDIFF SWANSEA.	
WOLVERHAMPTON BIRMINGHAM NORWICH LEICESTER NOTTINGHAM DERBY.	22·1 21·0 19·9 20·3 20·4 18·5	20·7 18·6 18·7 14·7 17·2 15·0	0·01 0·04 — 0·01 — 0·01	0·06 0·35 — 0·01 — —	0·53 0·53 0·40 0·45 0·48 0·41	0·85 0·67 0·21 0·56 0·60 0·65	0·23 0·20 0·13 0·28 0·17 0·14	0·63 0·15 0·14 0·09 0·23 0·15	0·09 0·13 0·20 0·09 0·10 0·08	0·41 0·15 0·17 0·07 0·08 0·05	0·43 0·60 0·47 0·43 0·52 0·44	0·33 0·44 0·36 0·06 0·53 0·16	0·19 0·15 0·34 0·22 0·31 0·24	0·20 0·22 0·13 0·26	1·16 1·13 1·01 1·07 1·09 0·68	0·75 0·59 0·41 0·94 0·60 0·33	177 166 173 164 207 170 174 149	WOLVERHAMPTON. BIRMINGHAM. NORWICH. LEICESTER. NOTTINGHAM. DERBY.	
BIRKENHEAD LIVERPOOL BOLTON MANCHESTER SALFORD OLDHAM BURNLEY BLACKBURN PRESTON.	20·2 26·0 22·9 26·2 24·9 23·7 21·8 24·5 26·8	18·1 23·8 18·8 20·4 21·0 18·6 18·7 17·9 20·8	0·02 0·04 0·01 0·03 0·01 0·07 0·01 0·02 0·05	0·04 0·04 — 0·04 0·17 — — 0·01	0·54 0·89 0·83 0·81 0·84 0·83 0·70 0·95 0·87	0·87 0·59 0·13 0·43 0·71 0·40 0·37 0·10 0·33	0·30 0·49 0·30 0·43 0·57 0·33 0·39 0·54 0·41	0·11 0·45 0·08 0·22 0·55 0·16 0·53 0·07 0·11	0·11 0·16 0·10 0·23 0·35 0·17 0·23 0·10 0·17	0·39 0·19 0·08 0·28 0·31 0·72 0·58 0·86 0·30 0·07	0·46 0·67 0·65 0·64 0·68 0·41 0·48 0·18 0·54 0·64	0·64 0·55 0·50 0·50 0·48 0·61 0·48 0·33 0·41	0·31 0·34 0·26 0·28 0·44 0·48 0·39 0·32 0·43	0·16 0·26 0·23 0·15 0·26	0·76 1·10 1·27 1·09 1·51 0·89 1·49 1·28 2·23	0·46 1·00 0·78 0·67 0·63 0·80 0·80 0·70 1·42	143 179 163 180 180 174 161 215 170 169 229	BIRKENHEAD. LIVERPOOL. BOLTON. MANCHESTER. SALFORD. OLDHAM. BURNLEY. BLACKBURN. PRESTON.	
HUDDESFIELD HALEFAX BRADFORD LEEDS SHEFFIELD HULL SUNDERLAND GATESHEAD NEWCASTLE.	20·2 20·9 20·5 21·8 22·1 20·2 22·3 20·8 22·0	15·8 16·5 17·0 17·9 17·8 17·4 17·7 17·7 18·3	0·00 0·06 0·06 0·01 0·01 0·04 0·09 0·01 0·01	— 0·04 0·12 0·01 0·01 0·01 0·01 — —	0·59 0·47 0·50 0·55 0·53 0·44 0·80 0·85 0·65	0·13 0·36 0·75 0·49 0·43 0·43 0·85 1·00 0·48	0·24 0·25 0·31 0·43 0·58 0·19 0·31 0·38 0·28	0·23 0·03 0·32 0·13 0·12 0·11 0·18 0·09 0·14	0·12 0·13 0·08 0·08 0·11 0·08 0·08 0·09 0·16	0·22 0·13 0·08 0·19 0·20 0·55 0·73 0·38 0·52 0·62 0·51	0·41 0·29 0·46 0·45 0·45 0·73 0·38 0·45 0·62 0·51	0·55 0·20 0·30 0·24 0·19 0·18 0·10 0·15 0·76	0·13 0·06 0·13 0·16 0·13 0·22 0·37 0·25 0·13	0·36 0·30 0·88 1·18 1·18 1·18 1·10 1·15 0·71	0·20 0·04 0·30 0·45 0·56 0·48 0·84 0·47 0·49	164 163 171 155 176 165 163 164 164	HUDDESFIELD. HALEFAX. BRADFORD. LEEDS. SHEFFIELD. HULL. SUNDERLAND. GATESHEAD. NEWCASTLE.		

* See note (†) to Table 1.

TABLE 4.—33 Towns.—Mean Temperature at Greenwich, and

Number of Week.	WEEK ENDING	MEAN TEM- PERATURE AT GREEN- WICH.		ANNUAL RATE OF													
		Fahrenheit.	Centigrade.	THIRTY-THREE TOWNS.	LONDON.*	WEST HAM.	CROYDON.	BRIGHTON.	PORTSMOUTH.	PLYMOUTH.	BRISTOL.	CARDIFF.	SWANSEA.	WOLVERHAM- TON.	BIRMINGHAM.	NORWICH.	LEICESTER.
	YEAR (52 weeks)	49.9	9.94	18.1	17.8	16.2	18.2	16.4	15.2	18.3	17.3	16.2	17.0	20.7	18.6	18.7	14.7
	March Q. (13 weeks)	41.4	5.22	21.0	21.2	18.8	16.1	18.8	16.4	28.1	22.9	19.3	18.9	22.9	22.4	25.9	16.8
	June " (13 weeks)	53.3	11.83	17.4	17.4	15.5	11.5	13.6	12.3	15.6	16.1	16.1	15.6	22.5	19.4	16.5	13.2
	Sept. " (13 weeks)	58.6	14.78	16.4	15.9	14.9	12.4	15.6	14.3	13.5	13.3	13.9	14.5	18.7	15.1	15.1	14.1
	Dec. " (13 weeks)	46.4	8.00	17.7	16.6	15.5	12.7	17.7	17.6	16.1	16.7	15.6	19.2	18.7	17.4	17.4	14.6
1	Jan. 6	26.5	-3.06	22.8	24.4	25.8	15.8	23.3	17.7	40.3	21.4	20.3	18.0	19.6	24.7	37.0	15.2
2	" 13	37.5	3.06	28.5	29.5	23.9	26.1	23.7	23.2	55.7	36.6	24.2	20.8	22.7	31.6	60.2	21.2
3	" 20	45.0	7.22	23.2	23.7	21.0	16.3	25.0	16.5	38.0	28.3	21.4	19.1	24.5	29.9	42.4	15.7
4	" 27	41.6	5.33	20.7	19.8	16.0	17.7	22.8	16.8	29.6	23.0	19.6	20.8	19.0	25.6	31.1	14.9
5	Feb. 3	42.0	5.56	20.0	19.4	19.3	14.4	18.0	18.9	27.9	27.6	20.3	17.5	18.4	20.9	21.2	13.8
6	" 10	46.0	7.78	19.1	18.4	16.0	12.1	15.8	17.1	18.4	26.5	19.6	19.7	17.8	22.6	21.7	13.5
7	" 17	41.0	5.00	18.7	18.6	16.6	11.2	15.8	17.1	20.8	21.4	17.2	18.6	27.0	16.9	17.8	16.0
8	" 24	34.3	1.28	20.0	19.9	16.6	17.2	17.1	12.2	25.5	17.7	16.5	23.5	29.4	20.9	17.8	18.2
9	March 3	44.0	6.67	20.5	21.0	16.6	14.9	19.3	15.6	25.5	19.0	17.5	14.2	33.1	21.1	20.2	13.8
10	" 10	44.2	6.78	19.9	20.4	20.1	17.2	18.9	14.6	22.5	20.9	22.4	20.2	23.9	17.4	14.3	19.3
11	" 17	42.6	5.89	19.2	19.3	18.4	12.1	13.6	18.6	19.6	20.7	14.7	21.9	20.8	19.3	14.8	16.8
12	" 24	43.1	6.17	19.8	20.3	18.6	14.9	15.4	12.8	18.4	21.4	18.2	14.2	22.1	21.0	18.8	19.8
13	" 31	48.2	9.00	20.0	20.8	15.8	19.6	15.4	12.2	23.7	14.5	18.6	16.9	19.0	20.0	19.2	19.8
14	April 7	50.6	10.33	19.5	19.0	14.7	16.3	12.7	16.5	23.7	18.9	17.9	14.2	18.4	23.0	20.7	14.9
15	" 14	55.2	12.89	19.3	19.3	16.9	12.6	18.0	15.6	17.8	18.4	18.9	19.7	30.0	21.8	19.2	13.5
16	" 21	48.7	9.28	18.2	18.1	17.5	13.0	14.1	11.9	20.2	17.7	19.1	19.7	25.1	20.2	16.8	14.6
17	" 28	49.5	9.72	18.3	18.5	14.4	10.2	12.7	11.0	11.9	14.3	15.1	20.8	23.3	22.5	15.3	14.6
18	May 5	48.8	9.33	17.2	17.1	16.4	11.2	14.9	11.3	16.6	19.0	16.5	16.4	31.3	19.9	12.8	14.9
19	" 12	51.0	10.56	18.2	18.4	19.9	12.6	10.5	12.2	17.8	17.7	16.1	12.6	22.1	20.8	16.3	14.6
20	" 19	54.5	12.50	17.1	17.5	15.3	7.9	16.3	9.5	16.0	14.5	17.5	15.9	20.8	18.6	22.2	13.0
21	" 26	48.2	9.00	17.7	17.3	13.4	11.2	13.2	11.3	10.1	16.1	15.1	14.8	21.5	18.5	12.3	15.2
22	June 2	50.1	10.06	17.0	16.4	16.9	12.6	12.3	14.6	14.2	13.6	18.9	16.9	30.0	17.2	18.8	13.8
23	" 9	56.1	13.39	16.9	16.8	15.8	13.5	13.6	9.8	13.6	15.6	13.7	13.1	14.1	20.5	13.8	13.5
24	" 16	56.3	13.50	15.9	16.0	14.7	12.1	14.9	12.5	13.6	15.0	13.3	12.6	22.1	16.0	17.8	10.2
25	" 23	58.9	14.94	15.7	16.0	12.3	9.3	12.7	11.3	12.5	13.8	14.0	16.4	17.2	19.4	15.3	8.3
26	" 30	63.8	17.67	15.5	15.4	13.1	7.0	10.5	12.8	14.2	15.9	13.3	10.4	15.9	13.3	12.8	10.2
27	July 7	66.0	18.89	16.1	15.8	14.0	7.9	15.8	14.3	17.2	14.5	15.1	18.6	13.5	17.3	12.3	9.6
28	" 14	59.2	15.11	15.9	16.3	13.8	12.6	12.7	12.5	11.3	17.7	10.2	12.6	15.3	16.9	13.8	12.1
29	" 21	59.1	15.06	16.6	16.8	17.1	12.6	14.5	13.4	15.4	12.0	9.8	13.1	18.4	16.1	16.3	13.5
30	" 28	62.8	17.11	17.0	17.2	14.4	13.5	12.3	11.9	11.3	15.9	15.1	13.3	22.1	14.5	17.8	13.2
31	August 4	62.1	16.72	17.2	17.6	14.0	13.5	12.3	9.8	19.6	12.4	13.0	10.4	15.3	14.5	14.3	17.4
32	" 11	60.4	15.78	17.6	17.4	17.7	9.8	15.4	16.5	11.9	12.0	10.9	10.9	21.5	14.9	15.8	16.0
33	" 18	59.2	15.11	17.6	17.1	19.3	14.9	15.8	13.7	10.1	12.9	11.6	12.0	20.8	12.8	17.8	17.4
34	" 25	57.4	14.11	16.8	15.4	15.3	14.0	20.6	18.3	10.7	13.6	12.3	13.7	15.9	15.9	16.3	13.5
35	Sept. 1	60.8	16.00	15.2	14.4	15.3	10.7	19.3	13.7	11.9	10.6	11.9	14.2	17.8	15.6	13.8	18.5
36	" 8	52.7	11.50	15.3	14.1	10.5	13.0	11.4	14.0	14.8	12.0	19.6	15.3	22.1	13.0	16.8	14.1
37	" 15	54.8	12.67	15.9	14.9	15.3	13.0	22.0	16.8	12.5	14.3	16.1	18.0	20.8	14.4	14.3	16.3
38	" 22	55.9	13.28	15.7	14.5	15.3	15.4	14.5	18.0	12.5	12.9	16.8	15.3	20.2	14.1	13.8	13.8
39	" 29	52.5	11.39	16.1	15.3	11.8	10.7	13.2	12.5	16.0	11.7	18.6	18.6	19.6	16.3	13.8	8.0
40	October 6	52.8	11.56	16.0	15.4	13.4	10.7	14.5	15.2	10.1	14.3	11.9	12.6	20.2	13.0	14.3	10.8
41	" 13	53.0	11.67	16.7	15.5	13.8	9.3	11.9	15.2	19.6	18.9	12.6	18.6	16.6	16.8	11.4	12.7
42	" 20	44.3	6.83	17.0	15.9	14.0	15.4	18.4	15.6	11.9	16.1	16.8	20.8	14.1	16.4	12.3	11.9
43	" 27	50.3	10.17	18.5	17.8	18.8	10.2	19.3	19.2	20.2	16.8	13.7	19.1	15.9	16.2	14.3	12.4
44	Nov. 3	54.0	12.22	17.3	16.4	15.8	10.2	18.4	14.0	11.3	13.8	14.7	16.4	17.8	15.1	12.3	13.0
45	" 10	50.3	10.17	16.9	15.0	16.0	13.0	15.8	18.3	17.8	17.5	15.1	23.0	19.0	17.8	14.3	13.0
46	" 17	47.0	8.33	17.1	15.3	15.8	10.7	20.2	15.2	16.0	15.4	14.0	24.6	21.5	19.2	21.2	11.0
47	" 24	44.0	6.67	17.3	15.9	15.5	16.8	19.3	17.4	11.9	20.9	16.1	16.9	15.9	19.3	22.7	20.7
48	Dec. 1	40.3	4.61	17.8	16.1	20.1	14.4	16.3	21.0	16.6	15.2	17.2	25.1	15.9	17.2	21.2	18.2
49	" 8	39.8	4.33	20.2	19.4	17.1	20.0	18.4	20.4	17.2	18.6	18.6	19.1	22.1	20.9	29.1	16.5
50	" 15	45.4	7.44	19.7	18.6	11.8	13.5	18.9	19.2	26.1	18.0	23.3	17.5	23.3	19.3	15.3	21.2
51	" 22	43.9	6.61	18.2	17.4	15.3	14.0	14.9	19.8	11.3	17.0	17.5	20.2	19.6	18.0	24.2	14.9
52	" 29	43.0	6.11	18.0	17.2	13.6	6.5	23.3	18.6	19.0	15.2	15.1	15.3	21.5	17.5	13.8	13.2

* See note (†) to Table 1.

Annual Rate of Mortality in each Town, in each Week of 1894.

MORTALITY PER 1000 IN																				Number of Week.
NOTTINGHAM.	DERBY.	BIRKENHEAD.	LIVERPOOL.	BOLTON.	MANCHESTER.	SALFORD.	OLDHAM.	BURNLEY.	BLACKBURN.	PRESTON.	HUDDERSFIELD.	HALEFAX.	BRADFORD.	LEEDS.	SHEFFIELD.	HULL.	SUNDERLAND.	GATESHEAD.	NEWCASTLE.	
47.2	15.0	18.1	23.8	18.8	20.4	21.0	18.6	19.7	17.9	20.8	15.8	16.5	17.0	17.9	17.8	17.4	20.8	17.7	18.3	
19.3	16.9	22.3	25.9	20.9	23.1	23.5	20.2	21.8	18.9	21.5	18.0	17.6	18.5	18.7	19.2	20.2	20.2	18.7	18.7	
18.2	12.9	18.2	22.7	17.2	19.6	21.6	17.7	17.7	16.9	17.4	15.1	16.8	15.8	16.4	16.3	16.1	18.0	16.7	18.5	
15.2	13.4	16.9	24.3	17.0	18.8	19.7	15.8	14.3	16.3	22.2	13.4	14.1	15.1	16.3	17.6	14.7	21.5	14.8	16.7	
16.1	16.9	14.8	22.5	20.1	20.2	19.1	20.7	21.0	19.5	22.0	16.7	17.4	18.6	20.1	17.9	18.5	23.4	20.4	19.2	
23.3	17.9	23.7	26.0	16.7	22.6	22.5	21.4	26.5	19.1	18.3	15.9	11.2	21.0	16.9	17.9	23.5	21.1	19.0	19.1	1
24.5	22.2	30.1	33.3	30.0	30.8	27.4	23.7	33.0	21.6	28.1	24.9	23.0	21.9	27.0	24.8	26.5	22.2	19.5	20.7	2
18.7	26.9	25.7	26.0	25.1	21.9	22.0	16.9	18.9	17.0	23.4	24.3	15.2	22.1	21.1	19.1	21.6	26.8	18.4	20.7	3
18.9	14.8	17.3	24.6	19.4	23.8	30.1	18.8	24.3	24.0	24.8	22.2	18.5	19.6	18.8	19.7	18.6	16.5	22.9	19.9	4
18.2	15.8	25.2	29.2	21.2	22.4	20.5	18.4	22.2	13.3	21.1	16.9	18.0	16.5	18.6	18.6	23.8	16.5	18.4	17.6	5
21.0	15.8	23.7	24.2	17.6	21.7	19.0	16.5	14.6	17.4	18.3	18.0	20.8	16.3	18.5	18.6	21.8	21.5	17.3	18.6	6
14.9	11.6	21.2	25.4	21.6	22.2	22.8	21.0	17.8	14.9	18.7	18.5	12.4	16.5	17.4	16.8	18.9	19.9	15.1	18.8	7
18.9	14.8	23.2	24.8	18.1	23.3	18.5	22.2	26.5	19.9	25.7	18.0	18.7	17.7	16.4	21.7	18.9	21.5	16.8	17.0	8
23.4	16.9	19.7	25.4	20.3	22.4	25.3	25.2	21.1	19.5	22.5	16.9	18.0	17.2	19.0	19.4	19.4	14.9	18.4	18.8	9
15.4	16.4	20.7	25.1	20.7	21.7	22.0	18.8	18.9	23.2	19.2	11.1	20.8	18.9	17.2	19.1	16.9	21.5	14.5	19.6	10
17.0	20.6	18.3	25.6	16.3	21.1	24.6	21.4	24.3	19.9	20.6	14.3	15.7	18.6	18.2	18.2	18.6	17.2	22.9	12.1	11
18.0	10.6	17.3	23.0	22.5	23.8	25.1	18.8	18.4	17.4	22.0	15.4	14.6	17.5	18.9	17.4	16.2	23.8	22.3	20.1	12
21.0	15.3	23.7	24.5	22.0	22.7	25.8	19.5	17.3	18.7	17.3	16.9	21.3	17.2	15.0	18.6	18.4	19.9	17.9	20.9	13
18.4	14.8	19.7	25.3	23.4	21.6	27.4	24.8	22.7	20.3	17.8	14.3	20.8	15.1	20.5	18.5	17.9	18.8	18.4	22.2	14
18.7	15.8	20.7	24.7	19.8	22.8	27.1	16.5	18.9	23.6	19.7	11.6	17.4	17.9	16.2	18.6	19.4	18.0	16.2	21.7	15
16.3	15.8	18.3	22.7	17.6	19.2	22.5	17.3	20.0	21.6	22.9	16.4	16.8	17.9	16.6	15.3	15.9	19.5	21.8	16.3	16
18.2	12.7	19.7	25.6	16.7	20.9	16.2	25.9	21.6	12.0	17.3	13.8	15.7	17.5	16.2	16.3	18.4	18.4	19.5	19.9	17
18.9	11.1	20.2	21.3	11.0	18.8	22.8	14.7	18.4	15.8	20.6	13.2	14.6	15.1	16.2	15.4	14.5	17.2	13.4	18.8	18
19.4	9.5	22.2	23.8	18.1	20.8	23.3	17.3	10.3	17.0	15.0	15.4	14.6	15.4	16.5	17.9	19.6	16.1	16.8	17.3	19
20.1	12.7	18.3	21.8	15.4	17.4	21.8	14.3	16.2	16.2	11.5	16.9	15.2	18.4	16.2	14.5	15.9	13.4	15.1	16.8	20
21.0	14.8	19.3	20.9	16.7	22.1	23.4	20.3	17.8	16.6	19.2	21.7	16.3	17.5	18.5	17.4	14.2	18.8	16.8	18.8	21
19.4	13.7	21.7	20.0	16.7	19.6	21.5	15.0	18.4	17.0	13.6	17.5	18.0	16.8	17.4	16.3	14.0	20.3	17.3	16.5	22
14.0	15.3	16.8	25.4	16.3	17.1	20.8	16.2	17.3	12.4	14.2	14.0	19.1	15.4	14.9	13.7	16.6	17.3	15.9	18.8	23
20.5	10.6	12.8	20.1	17.2	16.5	17.2	18.0	14.6	14.5	15.9	14.3	18.5	18.2	15.6	14.8	13.8	15.7	20.1	17.0	24
17.7	9.5	10.4	21.7	14.5	17.9	16.5	12.0	18.4	15.3	13.6	13.2	15.2	15.1	14.5	12.8	16.7	20.7	13.4	18.3	25
13.3	11.1	13.8	22.3	19.8	20.0	24.1	17.7	15.1	17.0	16.4	13.2	15.7	11.6	12.1	17.1	13.2	18.0	14.5	17.6	26
15.2	17.4	19.7	20.5	15.0	17.2	23.6	20.7	17.3	20.3	18.7	13.8	14.6	14.7	16.1	16.2	13.5	17.6	11.2	15.0	27
15.2	9.5	19.7	22.4	12.8	17.1	22.0	18.0	13.5	12.4	18.3	11.1	11.8	14.0	13.7	13.4	15.0	21.1	12.3	15.5	28
15.9	18.5	16.8	23.5	11.9	18.6	22.0	14.7	12.4	13.7	22.0	12.7	19.1	12.3	17.4	18.6	11.0	21.5	11.7	14.7	29
17.0	13.7	16.8	24.4	18.5	18.8	20.3	16.9	14.6	19.9	16.8	15.9	13.5	16.8	15.6	18.8	14.2	21.5	9.5	16.3	30
17.0	8.4	18.8	27.8	14.5	21.8	18.7	13.5	14.6	19.9	29.0	13.8	16.3	13.3	16.2	18.0	13.0	17.2	20.1	15.5	31
16.6	10.0	22.2	29.2	18.1	21.8	20.0	12.0	13.5	15.8	25.3	15.4	13.5	13.7	17.4	20.3	14.0	22.2	15.6	17.6	32
15.2	12.1	14.3	30.9	17.2	20.2	23.3	15.0	18.4	15.8	30.4	13.8	11.8	16.8	17.2	18.6	14.5	30.6	16.2	12.7	33
16.3	19.5	18.3	27.2	20.3	17.4	21.3	16.2	17.3	16.2	27.6	12.2	14.0	15.4	20.1	17.3	13.2	26.1	19.0	18.8	34
15.9	9.0	18.8	20.7	16.3	16.8	17.0	14.3	11.3	14.9	22.5	14.3	14.0	13.5	14.9	18.2	14.7	21.8	14.0	13.9	35
12.8	11.1	15.8	24.0	23.4	18.3	16.2	14.7	15.1	14.9	19.7	10.1	11.8	18.4	16.1	16.2	14.7	19.9	14.0	17.3	36
12.1	15.3	13.3	18.5	20.3	19.1	15.5	16.5	15.1	13.7	19.2	13.2	16.3	16.5	14.9	17.3	15.9	24.5	16.8	19.9	37
11.2	14.8	17.8	23.5	14.5	19.2	19.8	16.9	11.9	19.1	17.3	13.2	6.2	14.4	18.1	16.8	18.6	15.3	12.8	19.6	38
17.5	14.3	11.4	22.8	18.5	17.9	17.0	16.2	12.4	14.9	22.5	14.3	20.2	16.1	14.1	19.1	18.1	20.7	19.5	20.9	39
14.9	11.6	13.3	23.7	12.8	19.1	18.7	18.4	16.2	19.5	22.5	22.5	18.0	14.2	16.4	17.4	15.0	19.5	13.4	19.9	40
16.3	16.4	11.4	23.1	23.4	20.3	20.0	18.8	16.2	16.6	26.2	15.4	19.7	17.7	16.0	17.9	16.9	22.2	15.6	17.3	41
20.2	16.4	15.8	22.9	21.2	21.6	15.2	19.9	24.3	18.7	15.9	17.5	21.9	16.8	16.2	18.3	18.9	22.6	16.8	13.7	42
18.5	15.3	17.3	24.2	22.9	23.4	20.5	18.4	22.2	22.0	20.1	19.1	18.5	15.1	20.7	16.5	16.9	26.8	20.1	19.4	43
13.1	22.2	11.8	22.6	22.5	17.3	21.3	16.5	25.4	20.3	22.0	18.5	20.8	24.0	20.3	17.9	18.1	23.8	20.1	19.4	44
18.9	21.6	11.8	21.0	22.9	18.7	18.7	18.0	24.3	19.9	24.8	12.7	14.0	17.7	19.4	13.9	20.6	24.1	23.5	17.3	45
15.9	14.3	13.3	20.3	18.5	19.8	18.2	21.8	22.7	19.9	18.7	11.6	11.8	17.5	15.2	18.5	20.1	23.8	24.6	26.3	46
12.6	13.7	13.4	21.1	18.1	20.6	16.2	17.3	20.5	15.8	17.3	15.9	20.2	15.6	21.1	15.3	18.4	24.9	21.8	16.8	47
14.2	22.7	15.8	20.8	23.4	17.2	20.5	23.7	22.2	22.0	22.0	13.8	16.8	16.8	21.6	17.9	19.4	22.6	23.5	19.4	48
15.4	16.9	14.8	23.3	19.3	22.9	18.7	27.8	14.6	21.1	24.3	25.9	15.2	21.4	22.3	21.9	21.1	27.2	19.5	22.7	49
17.3	17.9	20.2	24.6	22.0	20.3	20.3	28.9	18.9	19.9	19.7	18.0	18.8	25.1	25.9	21.1	16.9	22.7	22.3	20.9	50
15.6	13.7	16.3	22.6	15.4	22.2	18.2	20.7	22.2	17.8	26.7	14.8	16.3	19.1	21.7	16.5	19.4	20.6	22.6	19.3	51
16.8	17.4	16.8	21.8	18.1	18.6	21.5	19.2	22.7	20.3	26.2	16.9	15.2	21.4	21.3	19.3	18.9	23.0	24.0	18.3	52

TABLE 5.—Sixty-seven other large Towns.—Population; Persons to an Acre; Births and Deaths in 1894.

TOWNS (Urban Sanitary Districts).	Cols.	The DEATHS registered in the Year include																				TOWNS (Urban Sanitary Districts).																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
		Persons to an Acre, 1894.		BIRTHS.	DEATHS.	Deaths of		DEATHS FROM										Deaths in Public Institutions.	Unidentified Causes of Death.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
		1.	2.			3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.			15.	16.		17.	18.	19.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	

TABLE 5. (continued).—Sixty-seven other large Towns.—Population; Persons to an Acre; Births and Deaths in 1894.

TOWNS (Urban Sanitary Districts).	The DEATHS registered in the Year include																	TOWNS (Urban Sanitary Districts).																																																																																					
	POPULATION, estimated to the Middle of 1894.	Persons to an Acre, 1894.	BIRTHS.	DEATHS.	Deaths of		DEATHS from								Inquest Cases.	Deaths in Public Institutions.	Uncertified Causes of Death.		Cols.																																																																																				
					Infants under 1 Year of Age.	Persons aged 60 Years and upwards.	Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping- cough.	Typhoid.	Diarrhoea.						Violence.																																																																																			
Lincoln.	42,947	11.5	1206	641	170	191	41	-	-	1	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100		
Grimsby.	56,529	20.0	1972	969	286	183	131	-	-	15	10	22	14	27	43	39	69	50	11	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100		
Stockport.	74,143	33.7	2306	1383	442	315	115	1	1	6	10	7	7	9	81	41	79	160	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100				
Macclesfield.	35,533	11.1	1003	678	135	231	53	-	25	2	5	10	1	2	9	15	36	94	5	6	9	6	23	33	35	24	189	43	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100			
Chester.	37,207	12.6	1109	626	136	178	42	-	1	7	18	1	6	9	9	22	37	115	3	4	6	9	23	33	35	24	189	43	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100			
Bootle.	52,805	33.1	1661	980	271	157	148	-	14	37	6	23	15	19	11	14	21	26	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100												
Walton-on-the-Hill.	43,977	23.1	1438	604	174	145	80	1	12	16	6	15	19	11	14	16	21	26	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100												
West Derby.	39,946	7.2	1095	554	138	136	67	-	13	12	4	11	65	33	52	63	67	155	83	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100												
St. Helens.	77,855	10.7	2312	1382	472	218	198	-	23	14	11	65	33	52	63	67	155	83	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100													
Southport.	44,929	12.3	968	702	141	225	51	-	1	8	12	23	15	19	21	22	65	25	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100							
Wigan.	57,431	26.2	2171	1117	356	172	146	1	40	15	4	26	14	48	40	59	109	13	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100								
Bury.	56,555	23.6	2241	986	280	177	108	6	16	43	6	35	6	40	34	41	111	37	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100								
Ashton-under-Lyne.	41,642	31.1	1213	799	135	186	53	4	4	4	4	6	5	30	32	52	92	15	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100																									
Rochdale.	72,245	17.3	1729	1255	217	355	122	1	4	28	40	10	12	27	28	50	96	141	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
Accrington.	41,268	12.0	1058	550	127	140	31	-	3	2	3	7	4	12	20	30	18	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	
Darwen.	36,776	6.0	1037	571	130	119	38	-	3	2	3	7	4	12	20	30	18	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	
Barrow-in-Furness.	53,243	4.8	1539	713	204	116	95	-	39	11	17	4	9	15	27	29	46	37	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100								
Barnsley.	37,494	15.7	1400	618	205	135	77	-	17	14	7	1	21	34	25	51	70	11	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56																																																																					

TABLE 6.—Sixty-seven other large Towns.—Birth-rate, Death-rate, and Analysis of Mortality in 1894.

TOWNS (Urban Districts).	ANNUAL RATE PER 1000 PERSONS LIVING.											PERCENTAGE to Total Deaths.			TOWNS (Urban Districts).			
	BIRTHS.	DEATHS.	DEATHS from								DEATHS under 1 Year to 1000 Births.	ANNUAL DEATH-RATE per 1000 living.		Inquest Cases.		Deaths in Public Institutions.	Uncertified Causes of Death.	
			Principal Zymotic Diseases.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping- cough.	Fever.	Diarrhoea.		Violence.						
Cols.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	Cols.
67 Towns.	30.5	16.0	1.69	0.02	0.32	0.16	0.19	0.39	0.20	0.41	0.55	143	8.6	62.1	6.1	10.0	2.3	67 Towns.
Dover.	28.2	13.1	0.35	0.04	0.09	0.11	0.06	0.12	0.09	0.08	0.84	92	6.9	52.0	8.2	12.7	9.6	Dover.
Hastings.	18.9	14.2	0.98	-	-	-	0.21	0.32	0.05	0.16	0.43	128	7.8	55.4	4.9	7.7	1.1	Hastings.
Eastbourne.	23.9	10.3	0.54	-	-	0.06	0.12	0.02	0.10	0.28	0.25	101	4.6	55.8	5.5	11.2	1.0	Eastbourne.
Bournemouth.	18.4	10.0	0.46	-	-	0.06	0.15	0.06	0.04	0.15	0.46	94	6.0	39.6	8.0	4.4	2.1	Bournemouth.
Southampton.	31.6	13.9	1.21	0.06	0.24	0.04	0.07	0.45	0.18	0.17	0.83	120	8.9	64.0	9.5	12.7	-	Southampton.
Reading.	28.9	16.7	1.06	-	0.23	0.06	0.09	0.20	0.08	0.40	0.47	110	7.1	62.8	6.6	13.2	1.2	Reading.
Willesden.	28.8	12.1	1.89	0.03	0.57	0.09	0.20	0.40	0.15	0.45	0.20	135	6.5	45.3	4.1	6.0	1.1	Willesden.
Hornsey.	21.6	9.5	1.40	-	0.11	0.02	0.44	0.45	0.11	0.27	0.29	102	4.1	62.8	5.3	8.9	1.0	Hornsey.
Tottenham.	32.9	14.9	1.91	0.01	0.22	0.07	0.43	0.52	0.24	0.42	0.61	138	8.0	60.2	9.7	13.3	0.3	Tottenham.
Oxford.	24.6	13.7	1.10	-	-	0.32	0.44	0.06	0.04	0.24	0.87	110	7.4	56.4	10.0	16.6	1.2	Oxford.
Northampton.	28.2	14.6	1.35	-	0.31	0.12	0.11	0.47	0.11	0.23	0.36	136	7.9	58.2	3.0	14.3	4.3	Northampton.
Cambridge.	24.8	16.1	1.73	-	0.61	0.08	0.08	0.45	0.11	0.40	0.64	130	8.2	68.3	8.3	18.7	0.2	Cambridge.
Leyton.	30.5	12.1	1.90	-	0.47	0.17	0.37	0.33	0.16	0.40	0.18	124	6.0	48.1	2.1	6.5	5.3	Leyton.
Walthamstow.	30.7	11.9	1.65	-	0.05	0.05	0.54	0.42	0.15	0.44	0.32	131	5.9	50.3	4.4	6.2	2.8	Walthamstow.
Colchester.	27.0	12.5	1.00	-	-	0.03	0.24	0.30	0.16	0.27	0.35	96	6.4	56.1	7.6	12.0	0.2	Colchester.
Ipswich.	28.6	16.8	1.64	-	-	0.32	0.28	0.74	0.12	0.18	0.82	122	9.1	62.2	7.9	10.6	1.1	Ipswich.
Great Yarmouth.	29.0	16.7	1.47	-	0.12	0.14	0.34	0.34	0.20	0.33	0.78	129	7.8	53.9	8.9	14.2	0.1	Great Yarmouth.
Exeter.	24.1	21.8	3.35	-	1.34	0.32	0.35	1.28	0.19	0.37	0.51	172	11.7	73.7	8.8	12.6	0.2	Exeter.
Devonport.	26.0	16.3	1.39	-	0.32	0.16	0.07	0.56	0.16	0.12	0.44	127	8.5	65.7	5.7	11.4	0.3	Devonport.
Bath.	22.0	17.5	2.14	-	0.33	0.10	0.29	0.71	0.06	0.05	0.69	130	9.4	57.4	7.6	19.8	0.3	Bath.
St. George (near Bristol).	35.4	16.2	3.01	0.14	0.71	0.10	0.17	1.37	-	0.32	0.24	164	8.6	51.4	3.8	4.1	4.4	St. George (near Bristol).
Gloucester.	30.3	15.9	1.06	-	0.07	0.05	0.17	0.32	0.17	0.38	0.74	138	8.0	60.2	7.0	13.5	3.6	Gloucester.
Cheltenham.	21.9	15.7	0.77	-	0.04	0.13	0.11	0.32	0.07	0.32	0.51	131	6.5	47.4	4.0	13.5	2.7	Cheltenham.
Longton.	39.7	22.0	2.20	-	0.14	0.08	0.03	0.72	0.33	0.80	0.61	236	9.4	87.1	4.6	7.4	3.6	Longton.
Hanley.	36.4	18.4	1.80	-	0.07	0.21	0.20	0.42	0.14	0.70	0.47	188	9.1	69.8	4.7	6.3	3.2	Hanley.
Burton-upon-Trent.	31.6	14.9	1.92	-	0.70	0.10	0.14	0.45	0.27	0.26	0.69	148	8.0	63.4	5.3	12.3	2.8	Burton-upon-Trent.
Walsall.	34.5	15.8	1.57	0.13	0.70	0.10	0.07	0.60	0.17	0.73	0.86	130	8.0	63.8	6.9	10.1	0.5	Walsall.
West Bromwich.	36.7	18.9	1.68	0.02	0.13	0.07	0.10	0.46	0.17	0.73	0.96	140	12.6	68.8	12.0	16.1	5.7	West Bromwich.
Dudley.	37.0	22.1	3.60	0.15	0.76	0.15	0.06	0.61	0.40	0.60	0.53	139	12.6	68.8	5.3	9.2	2.3	Dudley.
Worcester.	29.7	16.2	1.60	0.05	0.68	0.02	0.16	0.30	0.15	0.24	0.57	151	8.6	67.1	8.6	12.6	2.8	Worcester.
Smethwick.	34.6	15.7	1.42	0.22	0.37	0.05	0.10	0.39	0.15	0.24	0.37	137	7.9	67.1	5.2	5.6	4.8	Smethwick.
Aston Manor.	30.7	14.6	2.09	0.30	0.71	0.03	0.13	0.43	0.08	0.43	0.32	137	8.0	62.3	9.3	5.4	4.6	Aston Manor.
Corventry.	28.5	16.0	2.19	0.02	0.31	0.20	0.03	0.50	0.13	0.48	0.34	134	8.0	58.0	3.9	11.8	2.4	Corventry.

TABLE 6 (continued).—Sixty-seven other large Towns.—Birth-rate, Death-rate, and Analysis of Mortality in 1894.

TOWNS (Urban Districts).	ANNUAL RATE PER 1000 PERSONS LIVING.													TOWNS (Urban Districts).												
	Col.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	DEATHS FROM			Deaths under 1 Year to 1000 Births.	ANNUAL DEATH-RATE per 1000 living.			PERCENTAGE to Total Deaths.			Cols.			
													Principal Zymotic Diseases.		Small-pox.		Measles.	Scarlet Fever.	Diphtheria.	Whooping- cough.	Typhoid.	Typhus.		Violence.	Deaths in Public Institutions.	Uncertified Causes of Death.
Lincoln	-	28.1	14.9	0.95	-	-	0.02	0.02	0.42	0.19	0.75	0.42	-	-	-	141	7.2	61.7	5.0	10.3	1.7	17.	Lincoln.			
Grimsby	-	34.9	17.1	2.32	-	0.27	0.18	0.39	0.35	0.48	0.70	0.60	-	-	-	150	9.4	63.8	7.1	5.2	2.0	-	Grimsby.			
Stockport	-	31.1	18.7	1.55	0.01	0.01	0.08	0.13	0.09	0.12	1.11	0.55	-	-	-	192	9.2	69.4	5.7	11.6	1.4	-	Stockport.			
Macclesfield	-	28.2	16.8	1.40	-	0.70	0.06	0.14	0.28	0.06	0.25	0.42	-	-	-	135	10.0	68.2	5.7	13.9	0.7	-	Macclesfield.			
Chester	-	29.8	16.8	1.13	-	0.03	0.19	0.48	0.03	0.16	0.34	0.59	-	-	-	123	9.3	64.1	5.9	18.4	0.5	-	Chester.			
Boyle	-	31.5	18.6	2.80	-	0.27	0.70	0.11	0.44	0.63	0.65	0.63	-	-	-	163	11.3	69.9	5.3	19.3	4.4	-	Boyle.			
Walton-on-the-Hill	-	32.7	13.7	1.82	0.02	0.27	0.36	0.14	0.28	0.33	0.34	0.25	-	-	-	121	7.2	44.7	2.3	12.4	4.8	-	Walton-on-the-Hill.			
West Derby	-	25.9	14.1	1.68	-	0.33	0.30	0.10	0.28	0.33	0.34	0.40	-	-	-	133	8.0	52.5	3.7	4.6	5.0	-	West Derby.			
St. Helens	-	37.4	17.8	2.54	-	0.30	0.18	0.27	0.14	0.83	0.42	0.67	-	-	-	162	6.7	67.3	4.8	11.2	6.0	-	St. Helens.			
Southport	-	21.5	15.6	1.14	-	0.02	0.18	0.27	0.51	0.13	0.63	0.47	-	-	-	146	8.4	58.2	3.1	9.3	3.6	-	Southport.			
Wigan	-	37.8	19.4	2.58	-	0.70	0.26	0.07	0.45	0.24	0.84	0.70	-	-	-	164	11.1	65.8	5.3	9.8	1.3	-	Wigan.			
Warrington	-	39.6	17.4	2.68	-	0.38	0.76	0.11	0.62	0.11	0.70	0.60	-	-	-	125	10.2	68.1	4.2	11.3	3.8	-	Warrington.			
Bury	-	26.1	18.2	1.86	0.10	0.05	0.36	0.33	0.07	0.59	0.36	0.71	-	-	-	143	11.2	70.9	5.0	10.7	3.9	-	Bury.			
Ashton-under-Lyne	-	29.1	19.2	1.27	-	0.10	0.10	0.10	0.14	0.12	0.71	0.77	-	-	-	161	11.0	68.6	6.5	11.5	1.9	-	Ashton-under-Lyne.			
Rochdale	-	23.9	17.4	1.69	0.01	0.06	0.39	0.55	0.14	0.17	0.37	0.39	-	-	-	125	10.3	77.4	4.0	7.6	3.3	-	Rochdale.			
Accrington	-	25.6	13.3	1.05	-	0.07	0.05	0.07	0.17	0.10	0.29	0.48	-	-	-	120	9.7	66.1	5.5	3.3	2.9	-	Accrington.			
Darwen	-	29.0	16.0	1.06	-	0.03	0.08	0.06	0.48	0.28	0.13	0.53	-	-	-	125	9.7	72.6	4.4	4.7	4.2	-	Darwen.			
Barrow-in-Furness	-	23.9	13.4	1.78	-	0.73	0.21	0.32	0.08	0.17	0.27	0.51	-	-	-	133	7.9	60.5	4.1	6.5	5.2	-	Barrow-in-Furness.			
Barnsley	-	37.3	16.5	2.05	-	-	0.37	0.19	0.03	0.56	0.90	0.67	-	-	-	146	8.1	63.6	8.3	11.3	1.8	-	Barnsley.			
Rotherham	-	34.2	17.6	2.77	-	0.38	0.60	0.87	0.42	0.46	0.63	0.63	-	-	-	145	10.5	57.7	4.3	9.4	3.5	-	Rotherham.			
York	-	31.3	17.1	1.78	-	0.30	0.04	0.06	0.55	0.09	0.74	0.57	-	-	-	153	8.2	67.2	7.7	11.6	1.3	-	York.			
Scarborough	-	24.4	16.6	1.15	-	0.43	0.03	-	0.49	0.26	0.40	0.29	-	-	-	131	8.6	61.9	6.9	10.3	-	-	Scarborough.			
Middlesbrough	-	31.6	17.0	1.67	0.05	0.53	0.04	0.15	0.30	0.29	0.25	0.53	-	-	-	147	10.5	64.9	5.4	9.0	4.5	-	Middlesbrough.			
Darlington	-	31.8	14.6	1.48	-	0.51	0.03	0.23	0.18	0.23	0.30	0.28	-	-	-	118	7.7	62.3	2.1	7.7	3.5	-	Darlington.			
Stockton-on-Tees	-	31.0	15.3	2.07	-	0.72	0.34	0.32	0.08	0.19	0.42	0.47	-	-	-	135	8.8	63.6	6.7	8.9	0.5	-	Stockton-on-Tees.			
West Hartlepool	-	34.3	14.5	1.81	0.06	0.50	-	0.44	0.12	0.54	0.54	0.64	-	-	-	127	8.0	62.4	7.4	7.7	1.6	-	West Hartlepool.			
South Shields	-	34.9	17.0	1.24	-	0.18	0.33	0.05	0.10	0.21	0.37	0.68	-	-	-	140	9.4	71.6	9.4	9.6	1.4	-	South Shields.			
Jarrow	-	30.0	15.4	1.93	-	0.27	0.16	0.11	0.90	0.24	0.25	0.46	-	-	-	148	9.6	52.5	8.3	8.0	0.9	-	Jarrow.			
Tynemouth	-	30.6	17.4	1.31	-	0.05	0.40	0.15	0.32	0.19	0.19	0.59	-	-	-	134	9.6	69.8	7.4	9.8	0.1	-	Tynemouth.			
Carlisle	-	32.1	18.9	1.10	-	0.50	0.03	0.10	0.50	0.03	0.14	0.60	-	-	-	138	8.9	58.9	5.5	13.9	2.6	-	Carlisle.			
Newport	-	31.6	16.1	0.98	-	0.18	0.07	0.18	0.37	0.10	0.08	0.55	-	-	-	150	8.9	59.8	8.6	12.4	0.1	-	Newport.			
Ystradgynaf	-	36.6	16.6	1.60	-	0.13	0.15	0.18	0.30	0.41	0.43	0.89	-	-	-	137	8.5	53.2	7.0	1.9	1.6	-	Ystradgynaf.			
Merthyr Tydfil	-	37.2	20.7	2.48	-	0.43	0.16	0.19	0.88	0.37	1.04	1.04	-	-	-	173	11.8	60.1	7.0	6.0	0.8	-	Merthyr Tydfil.			
Aberdare	-	37.0	19.3	1.35	-	0.52	0.05	0.17	0.10	0.02	0.49	1.10	-	-	-	172	9.6	76.2	6.8	2.6	0.5	-	Aberdare.			

TABLE 7.—Births and Deaths in 1894 in Edinburgh, Glasgow, and Dublin, and in certain Colonial and Foreign Cities.

CITIES.	POPULATION (enumerated or estimated).	BIRTHS. (Excluding Stillborn.)	DEATHS.	ANNUAL RATE per 1000 Persons living.		DEATHS FROM SOME ZYMOTIC DISEASES.							
				Births.	Deaths.	Small-pox.	Measles.	Scarlet Fever.	Diphthe- ria.	Whoop- ing-cough.	Fever.	Diarrhoeal Disease.	
EDINBURGH - -	270,588	7174	4716	26·6	17·5	56	10	67	92	141	41	94	
GLASGOW - - -	686,820	22569	13561	32·9	19·8	5	245	205	243	586	164	349	
DUBLIN - - -	349,594	9888	8649	28·4	24·8	68	48	55	17	200	168	197	
CALCUTTA (51 weeks)	466,460	-	13573	-	29·8	323	61	-	21	15	5521	2608†	
BOMBAY - - -	821,764	15052	27293	18·4	33·3	529	785	?	?	?	6523	2750†	
MADRAS - - -	452,518	17054	16547	37·8	36·7	12	194	?	?	?	6148	2464†	
SYDNEY (with Suburbs).	421,030	13367	5961	31·7	14·2	1	6	76	134	117	123	279	
BRISBANE do. -	93,657	3261	1172	34·8	12·5	-	8	-	41	3	9	76	
PARIS - - -	2,424,705	60162	48988	24·9	20·3	173	988	149	1009*	248	715	8098†	
BRUSSELS (with Faubourgs).	498,400	12857	9034	25·8	18·1	20	119	27	119*	119	70	826†	
AMSTERDAM - -	446,295	14048	8150	31·6	18·3	4	79	19	99	132	38	48†	
ROTTERDAM - -	228,597	8054	4586	35·3	20·1	314	15	12	17	77	11	22†	
THE HAGUE - -	174,790	5469	2946	31·4	16·9	-	31	6	29	27	6	2	
COPENHAGEN - -	341,000	16033	6368	29·5	18·7	1	141	230	225	32	23	374	
STOCKHOLM - -	252,937	6841	4605	27·1	18·3	-	132	92	234*	41	21	232	
CHRISTIANIA - -	167,588	2550	3146	15·8	18·8	-	157	59	106	69	5	364	
ST. PETERSBURG (without Faubourgs).	954,400	30430	29940	31·9	31·4	99	916	563	970*	317	470	5910†	
MOSCOW - - -	753,469	-	25671	-	34·2	104	413	368	752	168	218	4104	
BERLIN - - -	1,701,643	47864	30946	28·1	18·2	6	344	443	1360	345	69	3793	
HAMBURG - - -	598,372	21447	10762	35·9	18·0	-	244	115	334*	79	36	688	
DRESDEN - - -	316,600	10459	6499	33·1	20·6	-	7	22	349*	98	26	740	
BRESLAU - - -	360,660	12764	9181	35·5	25·5	1	53	92	314*	94	22	1206†	
MUNICH - - -	398,000	13638	9233	34·7	23·6	-	64	55	234*	158	10	1594	
VIENNA - - -	1,465,537	46031	33355	31·5	22·8	18	875	454	1623*	60	74	3013	
PRAGUE - - -	339,172	10555	9164	31·2	27·1	4	360	51	196	50	195	254	
BUDA-PESTH - -	552,769	20158	13451	36·6	24·4	79	166	118	426	17	78	1184	
TRIESTE - - -	159,739	4973	4812	31·2	30·2	58	73	161	347*	30	31	209	
ROME - - -	456,777	11549	8852	25·4	19·4	1	123	7	43	39	274†	665	
TURIN - - -	335,957	7469	6921	22·2	20·6	6	203	42	118	22	79	533	
VENICE (51 weeks) -	158,187	3918	3638	25·3	23·5	-	-	8	23*	14	28	300	
CAIRO - - -	874,838	21663	19430	58·0	52·0	11	44	-	85*	113	504	6165	
ALEXANDRIA - - -	231,396	10895	9378	47·2	40·6	18	31	-	122*	83	232	2372	
NEW YORK - - -	1,957,294	-	41125	-	21·1	156	585	538	2356	274	323	3040	
BROOKLYN - - -	1,055,000	-	21075	-	20·0	68	202	188	1263	243	158	1824	
BOSTON - - -	501,107	-	11520	-	23·0	22	8	192	817	111	141	700	
PHILADELPHIA - -	1,139,457	-	22690	-	20·0	13	132	153	1396	187	371	1450	
BALTIMORE - - -	455,427	-	9436	-	20·8	-	3	85	198	112	274†	663	
CINCINNATI - - -	325,000	-	5945	-	18·3	-	1	11	200	53	170	234	
ST. LOUIS - - -	540,000	-	8710	-	16·1	-	3	29	240	64	350	636	
NEW ORLEANS - -	254,000	-	6807	-	26·9	3	5	2	156	26	380	461	

* Including deaths from croup.

† Including 1091 deaths from cholera in Calcutta, 386 in Bombay, 69 in Madras, 2 in Paris, one in Brussels, 38 in Amsterdam, 8 in Rotterdam, 2701 in St. Petersburg, and one in Breslau.

‡ Including 136 deaths from malarial fever in Rome, and 52 deaths from malarial and typho-malarial fever in Baltimore.

TABLE 8.—LONDON. Numbers of Natives and Immigrants respectively, living in LONDON, in 1881 and in 1891.

	MALES.		FEMALES.		EXCESS OF FEMALES.	
	1881.*	1891.	1881.*	1891.	1881.*	1891.
TOTAL INHABITANTS - - -	1,797,043	1,990,748	2,018,501	2,220,995	221,458	230,247
BORN IN LONDON - - -	1,146,935	1,323,480	1,254,756	1,435,915	107,821	112,435
BORN OUT OF LONDON - - -	650,108	667,268	763,745	785,080	113,637	117,612

* The figures for 1881 relate to Registration London as constituted in 1891.

TABLE 9.—GREATER LONDON (THE METROPOLITAN AND CITY POLICE DISTRICTS).—Area, Population, Inhabited Houses, and Ratable Value.

	AREA.		Enumerated POPULATION, 1891.	DENSITY OF POPULA- TION in 1891.		INHABITED HOUSES, 1891.	RATABLE VALUE.* 1891.
	In Acres.	In Square Miles.		Persons to an Acre.	Persons to a Square Mile.		
GREATER LONDON - - -	443,421	693	5,633,806	12·7	8,130	789,408	£ 40,913,457
REGISTRATION LONDON - - -	74,672	117	4,211,743	56·4	35,998	544,977	32,932,967
OUTER RING - - -	368,749	576	1,422,063	3·9	2,469	244,431	7,980,490

* Supplied from the London County Council and Metropolitan Police Offices.

TABLE 10.—GREATER LONDON (THE METROPOLITAN AND CITY POLICE DISTRICTS).—Population; and Births and Deaths in the 52 Weeks of 1894.

	POPULATION, estimated to the middle of 1894.	ANNUAL RATE per 1000 living.			TOTAL BIRTHS.	TOTAL DEATHS.	The DEATHS registered in the 52 Weeks include										
							Deaths of		Deaths from								
							Infants under 1 Year of Age.	Persons aged 60 Years and upwards.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping- cough.	Fever.	Diarrhea.	Deaths in Public Institutions.	
GREATER LONDON } -	5,948,300	29·6	16·5	2·46	175,705	97,784	24,306	22,399	164	3959	1104	3382	2784	862	2311	24071	
REGISTRATION LONDON* } -	4,349,166	30·1	17·8	2·66	130,553	77,039	18,732	17,212	89	3293	962	2670	2097	653	1780	22117	
OUTER RING -	1,599,134	28·3	13·0	1·89	45,152	20,745	5574	5187	75	666	142	712	687	209	531	1954	

* See note (†) to Table 1.

TABLE 11.—London.—Mortality in Five Groups of Districts (not corrected for deaths in Institutions), and Meteorology at Greenwich, 1851-1894.

	LONDON.	GROUPS OF DISTRICTS.					METEOROLOGY AT GREENWICH.			
		WEST.	NORTH.	CENTRAL.	EAST.	SOUTH.	Mean Temperature of Air.	Degree of Humidity. Saturation = 100.	Rainfall, in Inches.	Mean Hourly Horizontal Movement of the Air.*
Area in Square Miles . . .	116.7	16.2	21.1	3.3	8.6	67.5				
Decennial Increase of Population per Cent., 1881-91 . . .	10.4	10.6	9.7	-12.3 (decrease).	1.8	20.5				
Enumerated Population, 1891	4,211,743	740,735	993,884	247,538	705,114	1,524,472				
Density: Persons to an Acre . . .	1851 30 1861 36 1871 42 1881 49 1891 56	35 44 52 62 71	36 46 56 67 74	203 175 150 127 116	78 92 107 116 128	14 17 21 28 35				
MEAN RATE OF MORTALITY PER 1000 IN 44 YEARS.							MEANS IN 44 YEARS, 1851-94.			
YEARS.							°	ins.	miles.	
1851-1894	22.6	21.2	21.4	24.7	25.0	21.9	49.2	81	24.4	11.1
MEANS IN PERIODS OF TEN YEARS.							MEANS IN PERIODS OF TEN YEARS.			
							°	ins.	miles.	
1851-60	23.7	22.6	22.2	24.4	25.1	24.4	49.0	81	24.4	10.0
1861-70	24.4	22.7	23.6	26.5	26.9	23.4	49.6	81	24.0	10.8
1871-80	22.5	20.8	21.9	24.9	25.0	21.9	49.2	81	26.5	11.6
1881-90	20.5	19.7	19.1	23.3	23.7	19.5	48.9	81	23.1	11.8
ANNUAL RATE OF MORTALITY PER 1000.							METEOROLOGY IN EACH YEAR.			
							°	ins.	miles.	
1851	22.4	22.0	22.3	24.1	24.3	24.0	49.2	78	21.6	10.3
1852	22.5	21.5	21.2	23.9	23.3	23.0	50.6	75	24.2	10.6
1853	24.4	22.3	22.4	25.1	26.5	25.3	47.7	79	29.0	9.5
1854	29.4	28.5	24.4	27.4	30.0	24.8	48.9	83	18.7	10.3
1855	24.3	23.0	23.3	25.1	25.5	24.6	47.1	83	21.1	9.9
1856	22.0	21.5	21.1	23.0	23.3	21.8	49.0	83	22.2	10.6
1857	22.4	21.2	21.5	23.8	24.6	21.5	51.0	83	21.4	9.3
1858	23.9	22.4	22.9	24.5	25.8	24.0	49.2	79	17.8	9.7
1859	22.7	21.4	21.7	24.1	24.0	23.5	50.7	80	25.9	11.3
1860	22.4	22.2	21.2	23.3	24.1	22.1	47.0	84	32.0	10.0
1861	23.2	22.1	22.3	25.4	24.0	22.8	49.4	84	20.8	9.9
1862	23.6	22.0	22.0	26.2	26.0	22.7	49.5	84	20.2	10.0
1863	24.5	22.9	23.8	26.9	26.5	23.3	50.3	80	20.0	10.3
1864	26.4	24.4	25.3	29.5	29.0	25.3	48.5	78	16.7	9.5
1865	24.5	22.6	24.5	27.1	26.8	23.2	50.3	80	29.0	9.3
1866	26.5	22.6	25.3	27.1	24.0	24.1	49.8	82	30.7	11.4
1867	23.0	21.7	23.1	24.8	24.2	22.1	48.6	82	23.4	11.3
1868	23.5	22.2	22.7	25.2	25.4	22.9	51.5	78	25.2	12.2
1869	24.6	22.2	23.5	26.6	27.9	23.8	49.5	81	24.0	12.2
1870	24.1	23.8	23.5	26.0	25.0	23.4	48.7	79	18.5	11.1
1871	24.6	22.5	25.6	25.0	26.1	24.0	48.7	81	22.3	10.5
1872	21.5	19.6	21.2	23.6	23.6	20.7	50.7	82	30.0	11.9
1873	22.4	20.5	21.2	25.1	25.3	21.7	48.9	82	23.4	11.8
1874	22.4	20.9	21.7	25.7	25.5	21.0	49.3	82	20.0	11.5
1875	23.6	22.2	22.2	26.2	25.7	23.3	49.2	80	28.2	11.5
1876	21.9	21.0	21.2	24.1	24.0	21.2	50.1	80	24.2	12.1
1877	21.6	19.2	21.5	24.2	24.5	20.5	49.4	79	26.9	13.0
1878	23.1	21.6	22.0	25.2	25.1	23.0	49.6	81	29.2	11.1
1879	22.6	20.9	21.5	26.3	25.5	21.8	46.2	83	31.3	11.3
1880	21.7	19.8	20.8	23.8	24.3	21.3	49.4	84	29.8	11.7
1881	21.3	19.6	20.7	23.4	24.3	20.5	48.7	81	25.2	12.1
1882	21.5	20.0	19.8	24.0	25.3	20.8	49.7	84	25.2	12.8
1883	20.8	19.8	19.4	23.3	24.4	19.8	49.4	82	21.9	12.1
1884	20.9	19.7	19.6	23.8	23.4	20.2	50.7	80	18.1	11.9
1885	20.4	19.9	19.3	22.9	23.0	19.1	48.6	81	24.0	12.0
1886	20.6	19.8	18.9	23.4	23.9	19.9	48.7	81	24.2	11.8
1887	20.3	19.9	18.9	23.5	23.8	19.4	47.8	79	19.9	11.5
1888	19.3	17.7	17.7	22.7	22.7	18.1	47.7	82	27.5	12.8
1889	18.4	18.1	16.9	20.9	21.2	17.7	48.8	83	23.3	10.9
1890	21.4	20.5	19.6	24.8	25.1	19.6	48.6	81	21.9	11.2
1891	21.5	20.8	20.1	26.4	24.1	19.8	48.4	82	25.1	11.7
1892	20.7	20.1	19.5	24.0	23.5	19.1	48.1	80	22.3	11.0
1893	21.3	19.6	20.1	25.6	24.8	19.5	51.1	76	10.1	11.2
1894	17.8	17.1	16.3	20.0	20.8	16.2	49.9	81	26.9	12.4

NOTE.—The populations upon which these rates of mortality have been calculated are deduced from the numbers enumerated at the five Censuses of 1851, 1861, 1871, 1881, and 1891. The deaths used for the 43 years 1851-93 are for the calendar years, while those for 1894 are the numbers registered in the 52 weeks ending 29th December 1894.

The hamlet of Mottingham was transferred from Lewisham District to the Outer Ring on 1st April 1887. Certain changes affecting the West and Central groups of Districts were made in the year 1868, but no corrections for these changes have been made in this Table for any year prior to 1861.

* Approximated to the results of Robinson's anemometer by reduction from Whewell's, up to 1859.

TABLE 12.—LONDON: Population at different Ages, as enumerated in 1851, 1861, 1871, 1881, and 1891, with the Numbers of Males and Females at the various Ages in 1891.

—	ALL AGES.	0—	5—	10—	15—	20—	25—	35—	45—	55—	65—	75—	85 & upwds.
1851	2,362,236	293,562	243,648	216,369	213,694	241,401	423,123	308,949	208,363	122,946	62,608	19,345	2,728
1861	2,903,989	362,296	300,259	264,349	250,155	277,389	476,802	366,417	246,918	149,503	74,039	23,721	3,141
1871	3,254,260	422,629	349,686	309,658	307,075	321,585	551,973	404,954	290,977	174,265	90,198	27,604	3,656
1881	3,816,483	497,044	419,740	366,111	368,628	385,236	641,265	471,131	320,730	205,921	103,315	32,982	4,089
1891	4,211,743	501,622	454,160	416,425	416,820	428,454	717,514	519,637	368,536	221,551	122,728	39,172	5,126
Males	1,990,748	249,309	225,895	206,228	197,424	194,110	333,689	246,219	173,111	98,776	50,407	14,070	1,510
Females	2,220,995	252,313	228,265	210,197	219,396	234,344	383,825	273,418	195,425	122,775	72,319	25,102	3,616

NOTE.—In England and Wales the proportion of Females to Males in the population in 1891 was as 106 to 100; in London it was as 112 to 100. The proportions in 1881 were 105 and 112 respectively. The figures in this table refer to London as constituted in the respective census years.

TABLE 13.—LONDON: Marriages, Births, and Deaths, 1880-1894.

YEARS.	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894 (52 weeks).
MARRIAGES	34,144	34,578	35,612	35,379	35,381	34,560	34,482	34,251	34,635	35,412	36,762	37,341	37,191	37,016	36,902
BIRTHS	Persons 133,310	132,904	133,309	134,503	135,651	132,952	134,339	133,369	131,761	132,233	128,161	134,484	132,328	133,062	130,553
	Males 67,985	67,556	67,958	68,449	69,103	67,924	68,507	67,569	66,919	67,398	65,168	68,383	67,443	67,688	66,404
	Females 65,325	65,348	65,351	66,054	66,545	65,028	65,832	65,790	64,842	64,835	62,993	66,101	64,885	65,374	64,149
DEATHS*	Persons 81,957	81,431	83,015	81,108	82,448	80,978	82,691	82,443	79,244	76,162	89,268	90,795	88,440	91,552	77,039
	Males 42,038	41,742	42,141	41,713	42,565	41,285	42,257	42,201	40,495	38,947	45,969	46,487	44,851	46,816	39,572
	Females 39,919	39,689	40,874	39,395	39,883	39,693	40,434	40,242	38,749	37,215	43,309	44,108	43,589	44,712	37,467
EXCESS OF BIRTHS OVER DEATHS	51,353	51,473	50,294	53,395	53,203	51,974	51,648	50,916	52,517	56,071	38,893	43,389	43,888	41,510	53,514
ANNUAL RATES PER 1000.	Persons Married 18.1	18.1	18.4	18.1	17.9	17.4	17.2	16.9	16.9	17.1	17.6	17.7	17.4	17.2	17.0
	Births 35.3	34.7	34.5	34.5	34.3	33.4	33.4	32.9	32.1	31.9	30.7	31.9	30.9	30.9	30.1
	Deaths 21.7	21.3	21.5	20.8	20.9	20.4	20.6	20.3	19.3	18.4	21.4	21.5	20.7	21.3	17.8

NOTE.—The figures in the above table, except those for 1894, relate to the calendar year ending 31st December. The figures for 1894 relate to the 52 weeks ending 29th December 1894.

* See note † to Table 1.

TABLE 14.—LONDON. Population, and Zymotic and

PERIOD AND YEAR.	ESTIMATED POPULATION.	DEATHS FROM PRINCIPAL ZYMOTIC DISEASES.									
		Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Typhus.	Enteric Fever.	Simple and defined Fever.	Diarrhoea and Dysentery.	Cholera.
Cols. - 1	2	3	4	5	6	7	8	9	10	11	12
Period.											
1841-50	2,103,487	8,416	13,011	18,314		18,079	20,890			16,926	15,588
1851-60	2,570,489	7,150	13,766	26,317		22,497	22,597			26,362	12,886
1861-70	3,018,193	8,347	17,338	34,391	5,323	26,550	27,149			31,578	7,403
1871-80	3,513,843	15,539	17,947	21,247	4,319	28,728	1,887	8,536	2,579	33,168	1,328
1881-90	4,000,475	5,634	25,449	13,268	10,435	27,686	327	7,502	717	29,922	941
1845	2,073,298	909	2318	1085		1816	1324			940	43
1846	2,113,535	257	747	928		2035	1838			2308	228
1847	2,202,673	955	1778	1433		1800	3297			2283	117
1848	2,244,837	1620	1144	4767		1630	3685			2247	652
1849	2,287,302	521	1154	2149		2349	2564			3837	14,125
1850	2,330,054	499	980	1169		1568	2032			2077	127
1851	2,373,081	1062	1297	1285		2185	2374			2755	213
1852	2,416,367	1159	595	2571		1569	2183			2513	162
1853	2,459,899	211	978	2016		2667	2617			2649	883
1854	2,503,662	694	1409	3477		2502	2816			3325	10,738
1855	2,547,639	1039	878	2611		2438	2460			2190	149
1856	2,591,815	531	1479	1819		2092	2717			2414	152
1857	2,636,174	156	1841	1599		2527	2195			3298	214
1858	2,680,700	242	2369	4184		2708	1919			2220	131
1859	2,725,374	1153	1330	3481	773	1742	1840			3513	193
1860	2,770,181	898	2090	2017	484	2067	1476			1485	51
1861	2,815,101	217	1062	2381	674	3548	1843			2740	168
1862	2,860,117	366	2334	3492	730	2168	3673			1839	106
1863	2,905,210	1996	1634	4955	799	2175	2871			2492	159
1864	2,950,361	547	2788	3244	611	2423	3732			3013	156
1865	2,995,551	640	1290	2179	431	2935	3217			3721	195
1866	3,040,761	1391	2220	1892	462	2960	2688			3294	5596
1867	3,085,971	1345	1143	1451	447	2278	2184			3060	240
1868	3,131,160	597	1962	2916	495	2338	2468			4110	324
1869	3,176,308	275	1456	5841	340	3769	716	1069	615	3495	219
1870	3,221,394	973	1449	6040	334	1956	472	976	570	3814	239
1871	3,267,251	7912	1427	1902	344	2291	384	871	436	3968	221
1872	3,319,736	1786	1680	918	267	3259	174	807	322	3588	181
1873	3,373,065	113	2149	945	320	2620	277	908	325	3950	162
1874	3,427,250	67	1680	2648	419	1867	312	879	337	3301	123
1875	3,482,306	46	1408	3677	581	3204	128	817	272	3289	108
1876	3,538,246	736	1720	2308	387	2737	159	769	202	3585	135
1877	3,596,085	2551	2387	1530	316	1817	157	901	194	2421	88
1878	3,652,897	1417	1500	1808	566	4483	151	1033	197	3534	124
1879	3,711,517	450	2475	2661	575	2934	71	849	160	1894	53
1880	3,771,139	471	1521	3100	544	3516	74	702	134	3738	133
1881	3,824,980	2367	2536	2114	657	1973	92	971	134	3055	95
1882	3,862,956	430	2338	2006	867	4682	53	975	95	2144	79
1883	3,901,309	136	2441	2006	952	1698	55	963	102	2652	83
1884	3,940,042	1336	2271	1430	951	3156	32	925	78	3903	163
1885	3,978,160	1419	2909	732	904	2481	28	597	78	2793	77
1886	4,015,666	24	2086	690	851	2371	13	618	73	3996	137
1887	4,053,565	9	2904	1443	953	2935	19	612	44	3801	107
1888	4,098,968	9	2425	1214	1311	2993	9	694	35	2206	54
1889	4,139,555	—	2308	785	1617	1787	10	538	42	2892	62
1890	4,180,654	—	3231	853	1382	3210	10	609	36	2750	84
1891	4,222,157	8	1807	598	1435	2872	11	558	44	2435	71
1892	4,264,076	41	3415	1167	1969	2507	11	436	22	2557	87
1893	4,306,411	206	1852	1590	3271	2326	5	692	21	3427	133
1894	4,349,166	89	3293	962	2670	2097	5	635	13	1780	32

NOTE.—Wandsworth was not included in Registration London until 1844, nor Lewisham and throughout, but the population in each year refers

For the years 1845-50 the numbers of deaths from the various diseases are derived from
The figures for 1894 are for the

Infant Mortality in 50 Years 1845-94.

ANNUAL MORTALITY, PER MILLION PERSONS LIVING, FROM PRINCIPAL ZYMOTIC DISEASES.											Annual Mortality of Infants under One Year of Age to 1000 Births.	PERIOD AND YEAR.
Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Typhus.	Enteric Fever.	Ill- Simple and defined Fever.	Diarrhoea and Dysentery.	Cholera.			
13	14	15	16	17	18	19	20	21	22	23	24	Period.
402	623	863		867	979			782	688	157	1841-50	
280	530	1017		877	886			1030	514	155	1851-60	
276	576	1133	179	882	904			1040	243	162	1861-70	
457	510	600	122	815	55	244	75	949	38	158	1871-80	
145	636	335	259	693	8	189	18	743	23	152	1881-90	
440	1122	525		879	641			455	21	149	1845	
122	355	441		966	873			1096	108	157	1846	
427	795	640		715	1474			1020	52	166	1847	
724	511	2131		729	1647			1004	291	158	1848	
229	506	943		1030	1125			1683	6196	169	1849	
215	422	503		675	875			894	55	140	1850	
448	547	541		921	1000			1161	90	154	1851	
478	246	1061		648	901			1037	67	151	1852	
86	398	820		1084	1064			1077	359	158	1853	
277	563	1889		999	1125			1323	4289	164	1854	
408	345	1025		957	966			860	58	152	1855	
204	569	700		805	1045			929	58	150	1856	
59	509	607		959	833			1251	81	156	1857	
90	884	1561		1010	716			823	49	160	1858	
425	488	1277	284	639	675			1289	71	150	1859	
323	752	726	174	744	531			535	18	153	1860	
77	377	846	239	1260	656			973	60	155	1861	
128	816	1221	255	758	1284			643	37	143	1862	
687	562	1706	275	749	988			858	55	151	1863	
185	942	1097	207	819	1278			1018	53	169	1864	
214	431	727	144	980	1074			1242	65	171	1865	
457	730	622	152	973	884			1083	1840	172	1866	
436	370	470	145	738	708			992	78	159	1867	
190	625	929	153	745	786			1309	103	166	1868	
87	458	1839	107	1187	225	337	194	1100	69	170	1869	
302	450	1875	104	607	147	303	177	1184	74	164	1870	
2422	437	582	105	701	118	267	133	1214	68	171	1871	
537	505	276	80	979	52	242	97	1078	54	158	1872	
34	637	191	95	777	82	269	96	1171	48	160	1873	
17	490	773	122	545	91	256	98	934	36	156	1874	
13	404	1056	167	920	37	235	78	944	31	162	1875	
207	485	651	109	771	45	217	57	1010	33	157	1876	
710	664	439	88	505	44	251	64	673	24	146	1877	
388	411	495	155	1227	41	283	54	967	34	164	1878	
121	667	717	155	791	19	229	43	510	14	148	1879	
125	402	820	144	930	20	186	35	989	35	153	1880	
619	663	553	172	516	24	254	35	799	25	148	1881	
111	605	519	222	1212	14	252	24	555	20	151	1882	
35	626	514	244	410	14	247	23	680	21	146	1883	
313	575	362	241	799	8	234	20	983	41	156	1884	
357	751	181	227	624	7	150	20	684	19	148	1885	
6	519	172	212	714	3	154	18	994	34	159	1886	
2	716	356	235	723	5	151	11	937	26	158	1887	
2	590	295	319	723	2	169	9	537	13	146	1888	
-	553	190	361	432	4	130	10	650	15	141	1889	
1	773	206	331	763	2	146	9	658	20	163	1890	
2	428	142	340	630	3	132	10	577	17	155	1891	
10	801	274	462	538	3	102	5	600	20	154	1892	
48	384	360	760	540	1	161	5	796	31	164	1893	
20	757	221	614	482	1	146	3	409	7	143	1894	

Hampstead until 1847; thus the figures in the above Table do not relate to the same area to the same area as the facts in the other columns.

summaries of 52 or 53 weeks; the numbers for the 43 years 1851-93 relate to calendar years, 52 weeks ending 29th December 1894.

TABLE 15.—Causes of Deaths REGISTERED in London in each of the 11 Years 1884-1894, and in each Quarter of 1894.

YEARS - - - -	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894*	1894.			
												QUARTER ENDING			
												Mar. 30	June 30	Sept. 29	Dec. 29
CAUSES OF DEATH.	371 Days.	364 Days.	364 Days.	364 Days.	364 Days.	364 Days.	371 Days.	364 Days.	364 Days.	364 Days.	364 Days.	91 Days	91 Days	91 Days	91 Days
ALL CAUSES - - - -	83388	80504	82276	82205	78848	75683	91243	90216	87749	91586	77039	22977	18822	17240	18000
Small-pox { Vaccinated - } { Unvaccinated - } { No statement }	380 417 454	398 503 502	9 8 7	1 1 7	5 4 4	- - -	1 - 3	3 3 3	15 14 12	62 79 65	24 43 22	4 3 -	5 18 11	12 21 10	3 1 1
Measles - - - -	2285	2928	2078	2894	2401	2314	3291	1807	3393	1661	3298	787	1747	459	800
Scarlet Fever - - -	1444	707	688	1447	1209	784	876	589	1174	1596	963	274	285	228	175
Typhus - - - -	31	28	13	18	10	15	11	8	11	5	1	1	1	3	-
Relapsing Fever - -	1	-	1	-	-	1	-	-	-	-	-	-	-	-	-
Influenza - - - -	6	3	5	5	3	5	652	2336	2264	1526	750	452	110	53	135
Whooping-cough - -	3188	2479	2834	2928	2987	1749	3276	2876	2477	2330	2097	934	609	349	205
Diphtheria - - - -	973	896	846	961	1301	1588	1417	1361	1885	3265	2670	725	651	641	663
Simple & Ill-defined Fever	78	82	70	48	33	43	33	42	20	21	13	5	6	1	1
Enteric Fever - - -	936	585	618	606	677	638	618	547	486	693	635	130	194	107	265
Cholera and Chol. Diarr.	168	79	137	106	54	62	83	73	87	133	32	-	4	26	2
Diarrhoea, Dysentery	3781	2657	3950	3773	2176	2677	2753	2437	2546	3446	1780	171	140	1215	264
Remittent Fever - -	20	16	20	14	9	12	7	4	3	2	2	1	-	-	1
Hydrophobia - - -	9	27	9	2	3	7	2	2	-	1	1	1	-	-	-
Glanders - - - -	-	1	2	4	1	2	1	4	4	3	1	-	-	-	1
Cowpox and Vaccination	12	7	4	9	4	11	7	14	20	15	9	1	3	3	2
Venerel Affections -	537	543	544	498	516	544	541	472	502	544	499	129	115	122	133
Erysipelas - - - -	381	328	257	341	249	189	250	214	292	424	221	86	52	36	47
Pycæmia Septicæmia -	159	148	134	155	152	106	135	105	110	118	96	26	31	20	19
Puerperal Fever - -	327	323	279	328	275	222	237	222	313	332	210	68	54	29	39
Other Zymotic Diseases	102	104	70	100	76	81	63	73	88	94	70	19	25	15	11
Thrush - - - -	119	112	113	80	63	83	77	59	74	48	42	11	8	13	10
Worms and other Para- sitic Diseases - - -	17	17	18	22	14	14	17	15	15	17	17	4	3	4	6
Starvation, Want of Breast Milk - - - -	87	92	91	77	61	92	78	78	115	155	96	35	16	22	23
Alcoholism, Delirium Tre- mens - - - -	243	180	220	248	298	386	475	485	483	533	430	115	104	100	111
Rheumatic Fever, Rheu- matism of Heart - -	444	416	362	418	397	331	445	384	410	517	352	118	77	81	81
Rheumatism - - - -	140	129	104	115	108	151	114	113	117	112	75	24	15	17	19
Gout - - - -	163	176	139	157	138	164	169	161	157	187	154	51	34	36	33
Rickets - - - -	190	170	218	180	230	230	282	237	287	248	255	65	67	60	63
Cancer - - - -	2623	2624	2688	2874	2856	2982	3258	3277	3168	3412	3441	833	843	876	889
Tabes Mesenterica - -	1594	1824	1591	1406	1249	1261	1392	1277	1298	1269	954	236	187	324	307
Tubercular Meningitis -	1316	1325	1293	1245	1220	1189	1237	1194	1229	1180	1063	274	264	819	236
Phthisis - - - -	8881	8372	8332	7740	7459	7748	9074	8485	8038	8179	7543	2180	1849	1641	1873
Scrofula, Tuberculosis -	994	890	954	912	862	896	950	1035	1012	943	980	255	239	262	224
Other Constitutional Dis.	515	517	521	542	546	528	595	640	632	679	627	161	161	148	167
Premature Birth - - -	1911	1837	1930	1975	1938	2025	2249	2349	2394	2517	2361	571	574	568	648
Atelectasis - - - -	126	150	128	138	161	127	113	140	158	179	206	54	44	50	58
Congenital Malformations	353	376	319	352	345	367	348	394	378	388	405	95	97	99	114
Old Age - - - -	2473	2552	2651	2455	2485	2591	2711	2567	2382	2647	2135	647	517	489	532
Apoplexy - - - -	2141	2149	2133	2038	2236	2073	2313	2306	2206	2200	1990	539	483	426	501
Epilepsy - - - -	378	346	369	345	365	360	443	437	395	404	350	105	95	77	73
Convulsions - - - -	2602	2343	2390	2379	2392	2208	2353	2385	2148	2194	1856	471	434	509	451
Other Diseases of Brain, &c.	4440	4313	4462	4465	4364	4156	5003	4675	4222	4554	3911	1084	976	915	936
Disease of Organs of Special Sense - - -	121	112	133	98	116	114	144	134	142	182	162	46	37	41	88
Diseases of Circulatory System - - - -	5472	5755	6117	6290	6259	6480	7546	7340	7061	7099	6041	1787	1407	1308	1529

* For comparison of the numbers in 1894 with the corrected averages for the ten years 1884-93, see Table 16.

† See note (†), Table 1.

TABLE 15 (cont.)—Causes of Deaths REGISTERED in London in each of the 11 Years 1884-1894; and in each Quarter of 1894.

YEARS	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894*	1894.			
												QUARTER ENDING			
												Mar. 31	June 30	Sept. 29	Dec. 29
CAUSES OF DEATH.	371 Days.	364 Days.	364 Days.	364 Days.	364 Days.	364 Days.	371 Days.	364 Days.	364 Days.	364 Days.	364 Days.	91 Days.	91 Days.	91 Days.	91 Days.
Croup - - - - -	751	674	523	597	494	480	491	404	277	217	163	53	35	39	37
Bronchitis - - -	9211	10352	11232	10326	10085	8970	12448	13136	11183	10413	7816	3304	1418	937	257
Pneumonia - - -	4254	4642	4361	4797	4637	4061	6224	6915	6164	7158	5321	1946	1597	727	1251
Pleurisy - - -	261	327	261	323	267	239	329	366	305	402	241	72	72	53	44
Other Diseases of Respiratory System - - -	1484	1563	1587	1535	1493	1311	1694	1668	1450	1524	1097	390	239	191	277
Dentition - - -	796	766	693	623	603	545	628	520	479	493	417	127	115	104	71
Sore Throat, Quinsy - -	102	98	89	107	102	92	120	92	97	130	81	17	21	13	22
Enteritis - - -	336	365	518	509	464	570	745	758	773	1106	917	144	155	456	162
Peritonitis - - -	340	330	323	338	334	352	372	365	334	393	316	86	87	62	81
Diseases of Liver - -	1555	1432	1524	1462	1330	1321	1373	1303	1242	1294	1153	295	261	311	289
Others, Digestive System -	1662	1468	1561	1430	1530	1425	1540	1523	1518	1682	1520	427	371	375	347
Diseases of Lymphatic System and Ductless Glands - - -	105	84	115	95	95	108	129	115	87	134	119	31	28	27	33
Diseases of Urinary System - - -	1878	1955	2049	2100	2116	2020	2209	2305	2168	2355	2056	569	502	480	505
Diseases of Generative System - - -	315	273	283	297	270	253	315	280	250	303	237	78	65	58	56
Accidents of Childbirth - -	193	182	200	163	169	166	212	286	304	335	266	81	64	56	63
Diseases of Locomotive System - - -	381	337	339	345	368	375	392	330	331	262	310	84	90	63	68
Diseases of Integumentary System - - -	279	256	273	273	258	217	293	325	334	333	263	66	62	58	77
ACCIDENT OR NEGLIGENCE.†															
By Railways - - -								125	110	75	81	22	21	21	17
By Vehicles or Horses - -								244	269	304	255	51	79	76	49
In Ships, &c. (not drowning) - - -								21	30	22	31	8	7	6	10
In Building operations - -								42	40	41	33	9	9	8	7
In Conflagrations - - -								30	34	26	26	15	1	5	5
By Burns, Scalds, Explosions - - -	2518	2303	2393	2548	2504	2475	2660	285	323	349	325	107	65	52	100
By Drowning - - -								298	322	342	311	58	90	108	55
By Suffocation in Bed - -								626	621	574	513	179	113	93	133
By Poison or poisonous Vapours - - -								98	90	104	115	29	24	37	25
Other or not stated Causes -								954	868	1061	929	281	221	207	220
Battle - - - - -	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HOMICIDE.‡															
Murder and Manslaughter -	70	62	68	80	76	79	73	67	67	58	58	18	13	13	14
SUICIDE.‡															
Suicide - - - - -	367	345	402	398	400	373	351	490	450	443	404	116	130	129	89
EXECUTION.															
Hanging - - - - -	2	4	-	2	1	1	4	3	6	1	1	-	-	1	-
ALL OTHER CAUSES - - -	3300	3045	3258	3060	2923	2784	3003	2911	3044	3262	2663	661	541	788	675

* For comparison of the numbers in 1894 with the corrected averages for the ten years 1884-93, see Table 16.

† The evidence at inquests is often insufficient to enable the coroner to certify whether a violent death resulted from accident, murder, manslaughter, or suicide. All such cases are classed under "accident or negligence."

TABLE 16.—Deaths in several groups of **Ages** and from different **Causes** REGISTERED in **London** during the 52 Weeks of 1894.

CAUSES OF DEATH.	Corrected* Annual Averages, 1884-93.	TOTAL AT ALL AGES.	Under 5 Years.		5 and under 20.	20 and under 40.	40 and under 60.	60 and under 80.	80 and upwds.
			Under 1 Year.	1-5.					
ALL CAUSES†	88,699·0	77,039	18,732	12,634	4,954	9,770	13,737	14,239	2973
Small pox ‡									
{ Vaccinated	91·8	24	-	-	2	15	5	2	-
{ Unvaccinated	107·8	43	8	13	8	7	2	-	-
{ No Statement	111·1	24	1	2	3	10	4	-	-
Measles	2633·9	3293	726	2403	156	8	-	-	-
Scarlet Fever	1105·4	962	51	581	302	25	3	-	-
Typhus	15·8	5	-	-	-	4	1	-	-
Relapsing Fever	0·4	-	-	-	-	-	-	-	-
Influenza	716·5	750	53	36	43	139	210	235	34
Whooping-cough	2851·7	2097	850	1185	61	1	-	-	-
Diphtheria	1523·8	2670	159	1668	774	44	17	8	-
Simple and Ill-defined Fever	49·4	13	3	2	2	2	-	4	-
Enteric Fever	637·5	635	1	27	163	331	95	20	1
Cholera and Chol. Diarr.	102·7	32	14	7	-	2	3	6	-
Diarrhœa, Dysentery	8174·7	1780	1327	267	10	14	31	103	23
Remittent Fever	11·2	2	-	2	-	-	-	-	-
Hydrophobia	6·5	1	-	-	-	1	-	-	-
Glanders	2·3	1	-	-	-	-	1	-	-
Cowpox and Vaccination	10·8	9	9	-	-	-	-	-	-
Veneræal Affections	551·0	499	348	25	2	35	59	29	1
Erysipelas	397·5	221	66	5	5	25	47	59	14
Pyæmia, Septicæmia	139·0	96	24	8	11	24	21	6	2
Puerperal Fever	302·6	210	-	-	9	183	13	-	-
Other Zymotic Diseases	89·5	70	22	25	6	6	6	4	1
Thrush	86·5	42	43	-	-	-	-	-	-
Worms & other Parasitic Diseases	17·5	17	5	1	3	6	2	-	-
Starvation, Want of Breast-milk	96·8	98	83	2	1	1	3	5	1
Alcoholism, Delirium Tremens	573·8	430	-	-	-	161	236	41	-
Rheumatic Fever, Rheumatism of } Heart	433·6	352	1	17	120	111	79	24	-
Rheumatism	124·4	75	-	-	1	7	15	49	4
Gout	169·4	154	-	-	-	4	44	95	11
Rickets	242·0	255	93	161	-	1	-	-	-
Cancer	3123·9	3441	7	13	36	294	1584	1421	86
Tabes Mesenterica	1436·3	954	602	229	69	30	20	4	-
Tubercular Meningitis	1302·4	1093	315	538	205	26	7	2	-
Phthisis	8653·4	7543	92	205	637	3497	2607	495	10
Scrofula, Tuberculosis	993·3	980	305	299	167	137	67	13	2
Other Constitutional Diseases	600·9	627	33	15	56	111	205	189	18
Premature Birth	2221·0	2361	2360	1	-	-	-	-	-
Asteleatosis	143·3	206	206	-	-	-	-	-	-
Congenital Malformations	330·6	405	366	25	9	4	1	-	-
Old Age	2682·8	2135	-	-	-	-	7	1063	1065
Apoplexy	2292·0	1990	18	7	19	111	630	1040	163
Epilepsy	403·9	350	7	9	64	93	108	63	8
Convulsions	2459·1	1856	1649	197	10	-	-	-	-
Other Diseases of Brain, &c.	4694·8	3911	465	475	251	463	663	1213	181
Diseases of Organs of Special Sense	133·8	162	31	38	50	28	10	5	-
Diseases of Circulatory System	6875·9	6041	63	53	468	947	1901	2316	263

* The annual averages have been raised for increase of population, and reduced for comparison with the deaths recorded in the 52 weeks of 1894. For the population in each group of ages, estimated to the middle of 1894, see Table 21.

† Those cases of small-pox only are returned as "Vaccinated" or as "Unvaccinated" which are so certified by registered medical men. When the medical attendant does not certify that the deceased has, or has not, been vaccinated, or when the cause of death is not certified by a registered practitioner, the case is returned under the heading "No Statement."

‡ See note † Table 1.

TABLE 16 (continued).—Deaths in several groups of Ages and from different Causes REGISTERED in London during the 52 Weeks of 1894.

CAUSES OF DEATH.	Corrected* Annual Averages, 1884-93.	TOTAL AT ALL AGES.	Under 5 Years.		5 and under 20.	20 and under 40.	40 and under 60.	60 and under 80.	80 and upwds.
			Under 1 Year.	1-5.					
Croup - - - - -	516.0	163	27	124	15	-	-	-	-
Bronchitis - - - - -	11292.3	7816	2193	1159	70	207	1078	2322	587
Pneumonia - - - - -	5632.5	5321	1353	1875	225	579	820	681	88
Pleurisy - - - - -	323.8	241	15	37	17	40	78	50	4
Other Diseases of Respiratory System	1609.5	1097	195	188	55	88	224	279	73
Dentition - - - - -	646.2	417	234	163	-	-	-	-	-
Sore Throat, Quinsy - - - - -	108.2	81	13	34	16	8	5	5	-
Enteritis - - - - -	646.3	917	545	129	63	55	59	62	4
Peritonitis - - - - -	365.1	316	21	10	75	86	71	46	7
Diseases of Liver - - - - -	1454.9	1153	79	11	14	164	485	372	28
Others, Digestive System - - - - -	1812.7	1520	374	89	84	218	830	372	53
Diseases of Lymphatics, &c. - - - - -	112.2	119	13	4	14	34	34	15	5
Diseases of Urinary System - - - - -	2224.2	2056	21	42	105	876	638	724	90
Diseases of Generative System - - - - -	298.5	257	6	4	6	80	108	51	2
Accidents of Childbirth - - - - -	282.4	263	-	-	8	220	88	-	-
Diseases of Locomotive System - - - - -	871.1	810	21	83	103	60	52	36	5
Diseases of Integumentary System	298.7	263	77	15	4	17	46	84	20
VIOLENT DEATHS.†									
(ACCIDENT.)									
By Railways - - - - -	2707.5	81	-	1	10	32	30	8	-
By Vehicles or Horses - - - - -		255	5	48	65	39	54	38	6
In Ships, Boats, Docks (exclusive of Drowning) - - - - -		81	-	-	-	15	11	3	-
In Building Operations - - - - -		33	-	-	2	15	14	4	-
In Conflagrations - - - - -		26	-	10	5	4	2	5	-
By Burns, Scalds, Explosions - - - - -		325	16	164	60	28	33	20	4
By Drowning - - - - -		311	9	5	81	101	93	22	-
By Suffocation in Bed - - - - -		518	508	5	2	1	1	-	1
By Poisons or Poisonous Vapours - - - - -		115	7	12	8	44	81	13	-
Other or not stated Causes - - - - -		929	165	86	97	143	205	179	54
(VIOLENCE OTHER THAN ACCIDENTAL.)									
Homicide - - - - -	73.6	58	32	1	5	14	5	1	-
Suicide - - - - -	416.8	464	-	-	22	135	189	67	1
Execution - - - - -	2.5	1	-	-	-	1	-	-	-
OTHER CAUSES - - - - -	2337.2	2665	2338	149	3	18	43	63	16

* See note * on preceding page.

† The evidence at inquests is often insufficient to enable the coroner to certify whether a violent death resulted from accident, murder, manslaughter, or suicide. All such cases are classed under "accident or negligence."

TABLE 17.—Deaths Registered in the London Registration Districts, and Mean Temperature and Registered Sunshine at Greenwich, in each of the 11 Years 1884-1894.

REGISTRATION DISTRICTS.	AREA in Acres.*	DENSITY, Persons to an Acre, 1891.	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893	1894
Mean Temperature - - -	—	—	50°·7	48°·8	48°·7	47°·8	47°·7	48°·8	49°·6	49°·4	48°·1	51°·1	49°·9
Registered Sunshine in Hours -	—	—	1115	1261	1223	1401	1068	1166	1255	1222	1277	1454	1082
LONDON - - -	74,672	56	82,448	80,978	82,691	82,443	79,244	76,162	89,268	90,595	88,440	91,552	77,031
1a PADDINGTON - - -	1256	94	1974	2040	2062	2023	2152	1925	2276	2347	2311	2280	1918
1b KENSINGTON - - -	2188	76	3033	3193	3101	3126	3082	2710	3309	3624	3308	3228	2969
2 FULHAM - - -	3987	47	2696	2761	2781	3201	3207	3183	2632	3644	3895	3886	3611
3 CHELSEA - - -	794	121	2065	2208	2144	2188	1997	1981	2064	2232	2173	2127	1726
4 ST. GEO. HANOVER SQ. -	1940	69	3040	2916	3103	2923	2855	2713	3090	2984	2821	2774	2363
5 WESTMINSTER - - -	216	173	811	773	783	784	634	692	691	612	567	578	466
6 MARYLEBONE - - -	1506	95	2807	2853	2880	2657	2606	2363	2797	2834	2689	2651	2218
7 HAMPTSTEAD - - -	2248	80	841	770	774	771	778	835	1064	1019	1173	1452	1820
8 PANCRAS - - -	2672	88	5181	5005	5053	5085	4782	4664	5166	5384	5213	5203	4230
9 ISLINGTON - - -	3109	103	5515	5729	5510	5756	5206	5093	5962	6326	5983	6317	5083
10 HACKNEY - - -	3937	58	3964	3793	3769	3347	3823	3613	4399	4417	4500	4737	3817
11 ST. GILES - - -	244	163	1029	890	894	870	694	704	821	893	733	710	598
12 STRAND - - -	403	68	1018	947	989	912	923	885	910	1052	929	962	814
13 HOLBOEN - - -	811	175	3039	2897	2964	3004	2937	2530	3088	3232	2984	3096	2288
14 LONDON CITY - - -	672	57	1890	1422	1343	1364	1308	1177	1380	1295	1191	1388	1051
15 SHOREDITCH - - -	648	191	2873	2950	3216	3071	2962	2625	3248	3192	2989	3196	2587
16 BETHNAL GREEN - - -	755	171	2849	2807	3000	2845	2852	2620	2876	3107	2821	3024	2391
17 WHITECHAPEL - - -	579	196	2200	2084	2281	2249	2181	2176	2492	2437	2255	2688	2311
18 ST. GEO.-IN-THE-EAST -	244	188	1185	1237	1187	1161	1120	1018	1509	1102	1026	1153	957
19 STEPNEY - - -	465	123	1316	1197	131	1333	1354	1286	1600	1380	1375	1896	1201
20 MILE END OLD TOWN -	677	169	2193	2091	2142	2129	1987	1948	2263	2070	2280	2166	1951
21 POPLAR - - -	2833	71	3719	3569	3617	3521	3521	3274	3989	3770	3872	3925	3367
22 ST. SAVIOUR SOUTHWARK -	1119	181	4647	4229	4555	4469	3597	3797	4171	4187	3989	4075	3281
23 ST. OLAVE SOUTHWARK -	1506	91	3382	3031	3397	3359	3163	3109	3461	3552	3369	3461	2961
24 LAMBETH - - -	3941	70	5461	5212	5481	5490	5182	5163	5819	6095	5841	6165	5211
25 WANDSWORTH - - -	11454	27	4203	4202	4424	4317	4330	3973	4905	4787	5016	5093	4461
26 CAMBERWELL - - -	4450	53	3845	3765	3995	4140	4187	4193	4624	4576	4981	5024	4291
27 GREENWICH - - -	3423	48	3193	3059	3005	3117	3017	3025	3320	3498	3492	3662	3061
28 LEWISHAM - - -	10793	9	1117	1129	1175	1176	1216	1123	1254	1326	1870	1384	1281
29 WOOLWICH - - -	6500	17	1439	1534	1711	1645	1569	1717	1906	2013	1812	1971	1561
METROPOLITAN HOSPITALS) AND ASYLUMS OUTSIDE) REGISTRATION LONDON †)	—	—	403	536	28	20	27	14	1452	1283	1482	1725	1701

NOTE. — This Table is compiled from the Abstracts which appear in the Registrar General's Annual Reports, excepting for the year 1890 for which the numbers are derived from the Weekly Returns embracing 52 weeks.

* For area of Greater London see Table 9.

† For the years 1884-89 the figures refer to the Metropolitan Asylum Small-pox and Fever Hospitals only; for the years 1890-1894 the London County, and Metropolitan Lunatic and Imbecile Asylums are added.

TABLE 18.—LONDON. POPULATION; and BIRTHS and DEATHS in REGISTRATION DISTRICTS during the 52 Weeks of 1894.

REGISTRATION DISTRICTS.	Enumerated Population, 1891.	Total Births in 52 Weeks.	Total Deaths in 52 Weeks.	The DEATHS registered in the 52 Weeks include																
				Deaths of			Deaths from											Inquest Cases.	Deaths in Public Institutions.	Uncertified Causes of Death.
				Infants under 1 Year of Age.	Persons aged 1 to 60 Years and upwards.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Typhus Fever.	Enteric (or Typhoid) Fever.	Simple continued Fever.	Diarrhoea.	Cholera.	Violence.				
LONDON - -	4211743	130553	77,039	18732	17212	89	3293	962	2670	2007	5	635	13	1780	32	3147	6663	22117	651	
WEST DISTRICTS.																				
EAST DISTRICTS	740735	19354	13053	2850	3183	1	564	125	418	326	-	112	5	284	1	508	993	4142	40	
NORTH DISTRICTS	993884	26073	16663	3842	3902	4	624	263	828	454	1	166	1	334	4	675	1395	4327	29	
CENTRAL DISTRICTS	247538	6955	4751	1068	835	-	118	6	104	123	-	49	-	93	3	309	533	1824	12	
EAST DISTRICTS - -	705114	25771	14741	4095	2337	-	769	78	366	433	1	94	3	396	7	662	1889	4646	84	
SOUTH DISTRICTS - -	1524472	49370	26118	6838	5740	3	1214	359	950	756	3	212	4	687	17	986	1342	5470	536	
METROPOLITAN HOSPITALS AND ASYLUMS OUTSIDE REGISTRATION LONDON)	-	-	1708	19	525	81	4	131	4	-	-	12	-	6	-	7	11	1708	-	
WEST DISTRICTS.																				
St. PADDINGTON - -	117846	2837	1918	393	460	1	66	4	55	46	-	19	-	49	-	134	196	514	3	
St. KENSINGTON - -	136308	3673	2959	622	847	-	110	5	88	58	-	12	3	59	-	78	184	1056	2	
FULHAM - -	188878	6664	8611	964	682	-	231	112	258	119	-	33	1	98	1	113	261	893	6	
CHELSEA - -	96253	2700	1726	393	404	-	68	2	22	39	-	10	1	42	-	45	117	603	5	
St. GEO. HANOVER SQ.	134138	2736	2363	364	635	-	72	1	37	48	-	32	-	29	-	123	206	973	12	
WESTMINSTER - -	37312	744	466	104	135	-	17	1	8	16	-	6	-	7	-	11	29	98	12	
NORTH DISTRICTS.																				
MARLBORNE - -	142404	4304	2218	568	494	1	82	2	43	39	-	22	-	36	-	97	205	444	3	
HAMPSTEAD - -	69416	1472	1320	177	242	1	42	90	213	26	-	22	1	8	-	46	69	665	4	
PANCRAS - -	231379	6967	4230	1014	972	1	94	7	83	115	1	34	-	84	-	207	406	1329	15	
ISLINGTON - -	319143	9500	5083	1218	1297	1	204	21	142	197	-	23	-	115	4	159	397	936	5	
HACKNEY - -	229542	6880	3817	865	897	-	202	143	247	76	-	55	-	91	-	166	318	953	2	
CENTRAL DISTRICTS.																				
St. GILES - -	39782	1089	598	122	161	-	15	-	3	24	-	7	-	9	-	25	53	182	3	
STRAND - -	27516	500	814	130	166	-	21	-	20	17	-	10	-	10	-	55	98	475	2	
HOLBORN - -	141920	4891	2288	715	353	-	78	2	48	75	-	10	-	65	2	89	204	532	6	
LONDON CITY - -	38320	525	1031	121	195	-	4	4	33	12	-	22	-	9	1	140	176	635	1	
EAST DISTRICTS.																				
SHOREDITCH - -	124009	4332	2557	713	684	-	67	10	54	90	1	6	-	73	-	80	232	833	5	
BETHNAL GREEN - -	129132	4636	2398	664	487	-	126	8	74	71	-	18	-	58	3	83	286	570	2	
WHITECHAPEL - -	74462	3178	2312	559	313	-	73	8	73	57	-	37	-	45	2	177	391	1391	1	
St. GEO. IN-THE-EAST	45795	1577	951	282	198	-	46	5	15	39	-	4	-	44	-	34	130	279	-	
STEPNEY - -	57376	1906	1203	423	112	-	91	8	34	27	-	7	-	42	1	67	163	326	6	
MILE END OLD TOWN	107592	4042	1953	576	412	-	150	16	49	71	-	7	2	65	-	39	179	333	20	
POPLAR - -	166748	6800	3387	878	731	-	216	23	67	78	-	15	1	69	1	191	508	924	-	
SOUTH DISTRICTS.																				
St. SAVIOUR SOUTHWARK	202693	7042	3284	1107	503	-	211	12	73	120	-	12	-	94	-	114	272	303	103	
St. OLAVE SOUTHWARK	136660	4879	2964	745	537	1	136	11	68	65	-	26	-	78	-	178	269	868	61	
LAMBETH - -	275203	9231	5211	1264	1186	-	181	111	272	106	-	64	-	134	3	235	597	1455	98	
WANDSWORTH - -	307500	9447	4461	1209	1070	-	250	61	168	125	-	30	3	149	6	143	352	579	24	
CAMBERWELL - -	235344	7382	4290	1100	1180	-	198	21	95	140	1	14	-	97	2	116	227	1114	84	
GREENWICH - -	165413	5374	3052	731	624	1	149	127	101	112	1	40	1	62	5	99	168	779	51	
LEWISHAM - -	94335	1490	1283	303	387	-	41	4	34	39	-	16	-	23	-	23	46	160	25	
WOOLWICH - -	107324	3525	1568	379	243	1	68	12	39	49	1	10	-	25	1	78	121	212	60	
METROPOLITAN HOSPITALS AND ASYLUMS OUTSIDE REGISTRATION LONDON)	-	-	1708	19	525	81	4	131	4	-	-	12	-	6	-	7	11	1708	-	

London: Births and Deaths in Registration Sub-districts.

TABLE 19. LONDON.—POPULATION; and BIRTHS and DEATHS in REGISTRATION SUB-DISTRICTS during the 52 Weeks of 1894.

REGISTRATION SUB-DISTRICTS.		Enumerated Population, 1891.	Total Births in 52 Weeks.	Total Deaths in 52 Weeks.	The DEATHS registered in the 52 Weeks include																Deaths in Public Institutions.	Unrecorded Causes
					Deaths of		Deaths from															
					Infants under 1 Year of Age.	Persons aged 60 Years and upwards.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping- cough.	Typhus Fever.	Enteric (or Typhoid) Fever.	Simple con- tinued Fever.	Diarrhoea.	Cholera.	Violence.	Inquest Cases.				
WEST DISTRICTS.																						
St. Mary Paddington	WHH	-	84169	2124	1277	344	329	1	56	2	29	24	-	11	-	47	-	53	104	169	3	
St. John Paddington	H	-	33697	413	641	49	151	-	10	2	16	7	-	8	-	2	-	81	92	345	1	
Kensington Town	Ww	-	118751	8063	2397	557	717	-	97	5	23	54	-	7	2	52	-	60	140	891	1	
Brompton	HH	-	47657	610	572	75	139	-	13	-	10	4	-	5	1	7	-	18	35	165	1	
St. Peter Hammersmith	-	-	8586	230	121	20	28	-	6	-	4	1	-	3	-	4	-	9	10	-	-	
St. Paul Hammersmith	H	-	88653	2671	1389	332	297	-	56	4	41	49	-	9	-	45	-	68	122	177	-	
Fulham	Ww	-	91639	3763	2101	562	357	-	169	103	213	69	-	21	1	51	1	48	120	721	6	
Chelsea Kensal Town	-	-	21787	672	235	82	41	-	15	-	2	13	-	-	-	10	-	2	17	-	-	
Chelsea North	WHHHHH	-	41637	1213	911	149	236	-	21	-	10	13	-	5	-	1	-	14	49	450	5	
Chelsea South	HH	-	32829	810	580	162	127	-	32	2	10	13	-	5	-	19	-	25	52	153	-	
Mayfair	WH	-	23733	261	500	34	251	-	3	1	1	4	-	-	-	7	-	18	28	327	2	
Belgrave	WHHH	-	54031	1240	1009	159	214	-	30	-	24	21	-	22	-	9	-	57	92	402	7	
St. John Westminster	HH	-	34103	918	413	113	87	-	26	-	1	17	-	-	-	6	-	15	42	13	3	
St. Margaret Westminster	H	-	21668	317	441	60	83	-	13	-	11	6	-	7	-	8	-	32	44	231	-	
St. James Westminster	WHHH	-	24995	454	323	68	110	-	12	-	8	7	-	6	-	5	-	7	20	75	9	
St. Anne Soho	HHHHHH	-	12317	280	143	36	25	-	5	1	-	9	-	-	-	2	-	4	9	23	3	
NORTH DISTRICTS.																						
All Souls Myleb.	HHHHHHHHH	-	37713	707	745	102	164	-	11	1	27	4	-	11	-	2	-	39	65	332	-	
Rectory Marylebone	WH	-	20024	517	261	72	70	-	17	-	-	7	-	2	-	2	-	8	28	67	1	
St. Mary Marylebone	HHHH	-	10239	1419	208	87	65	-	4	1	3	7	-	3	-	8	-	8	19	52	-	
Christchurch Marylebone	H	-	33327	862	461	164	82	-	20	-	3	11	-	1	-	15	-	29	69	-	-	
St. John Marylebone	HH	-	32101	799	463	143	113	1	21	-	10	10	-	5	-	9	-	13	34	3	1	
Hampstead	WwHHHHH	-	68416	1472	1320	177	242	1	42	20	313	26	-	22	1	8	-	46	69	665	4	
Regent's Park	HH	-	33590	1007	594	151	108	-	21	-	9	20	-	2	-	10	-	18	46	43	1	
Rectory Court	wHHH	-	26321	646	738	119	144	-	7	1	34	7	-	12	-	7	-	31	51	136	-	
Gray's Inn Lane	HHH	-	27455	842	485	125	87	-	12	1	8	11	-	2	-	16	-	40	83	168	2	
Somers Town	HH	-	33829	968	488	156	80	-	12	-	2	7	-	5	-	22	-	34	62	86	3	
Camden Town	WH	-	15419	648	506	85	227	-	11	-	5	10	-	6	-	4	-	36	55	113	1	
Kentish Town	WW	-	95765	2856	1509	378	324	1	31	5	25	61	1	7	-	25	-	42	109	298	8	
Upper Holloway	WWWWHHH	-	90235	2698	2019	355	609	1	62	2	49	49	-	9	-	34	1	59	116	908	1	
Islington South-west	H	-	105557	3303	1447	440	248	-	106	12	46	81	-	5	-	35	2	43	134	14	-	
Islington South-east	-	-	64158	1891	811	247	224	-	19	4	21	30	-	8	-	27	1	37	87	-	-	
Highbury	HH	-	59193	1608	746	176	216	-	17	8	26	37	-	6	-	19	-	20	50	14	-	
Stoke Newington	H	-	30836	757	308	64	94	-	2	2	4	8	-	2	-	5	-	10	19	1	-	
Stamford Hill	-	-	17759	397	223	59	62	-	8	1	3	3	-	1	-	5	-	6	14	-	-	
West Hackney	H	-	42602	1177	572	136	152	-	12	2	26	17	-	5	-	14	-	28	59	80	-	
Hackney WwWwH	-	-	96486	3122	2117	427	461	-	127	136	200	33	-	43	-	50	-	95	102	864	1	
South Hackney wH	-	-	41769	1377	597	179	128	-	63	2	14	15	-	4	-	17	-	27	64	8	-	
CENTRAL DISTRICTS.																						
St. George Bloomsbury	-	-	16695	259	129	28	34	-	3	-	2	6	-	2	-	1	-	5	11	-	3	
St. Giles South	WH	-	13454	557	318	60	102	-	8	-	1	14	-	-	-	4	-	11	29	144	-	
St. Giles North	H	-	9633	253	151	36	30	-	4	-	1	4	-	4	-	4	-	9	15	38	-	
St. Martin-in-the-Fields	HH	-	14616	233	311	54	52	-	8	-	9	4	-	4	-	4	-	32	58	169	2	
St. Mary-le-Strand	WH	-	5706	118	93	18	21	-	6	-	1	2	-	-	-	1	-	4	16	13	-	
St. Clement Dunes	WH	-	7194	149	250	52	34	-	7	-	10	10	-	6	-	5	-	19	24	203	-	
Strand Union Work., Edmonton	-	-	-	-	90	6	59	-	-	-	-	1	-	-	-	-	-	-	-	90	-	
St. Geo. the Martyr	HHHHHHH	-	17021	404	538	151	52	-	12	-	37	15	-	4	-	9	-	11	24	364	-	
St. Andrew Eastern	WH	-	16343	428	199	65	33	-	9	-	7	-	-	2	-	4	1	9	23	22	-	
St. James Clerkenwell	-	-	12803	549	202	67	23	-	8	1	1	4	-	1	-	6	-	14	28	-	-	
Amwell Clerkenwell	-	-	16833	532	197	73	30	-	12	-	-	14	-	1	-	7	-	9	18	-	-	
Pentonville	-	-	17155	572	201	80	25	-	16	-	5	4	-	-	-	13	1	6	16	-	-	
Goswell Street	-	-	15375	527	203	64	45	-	8	-	4	15	-	-	-	19	-	14	23	-	-	
City Road	HHHH	-	29177	1530	480	169	69	-	3	1	-	11	1	-	-	19	-	14	49	77	1	
Whitecross Street	-	-	8273	253	95	30	15	-	3	-	1	2	-	1	-	3	-	5	14	-	-	
Finsbury	-	-	4935	96	54	13	8	-	1	-	-	3	-	-	-	-	-	4	6	-	-	
Holborn Union Work., Mitcham	-	-	-	-	69	-	53	-	-	-	-	-	-	-	-	-	-	1	1	69	1	
St. Botolph	H	-	8944	139	102	27	30	-	3	2	1	5	-	-	-	1	1	8	12	2	1	
Cripplegate	-	-	4539	51	32	5	12	-	-	-	-	1	-	-	-	2	-	2	2	-	-	
St. Sepulchre	H	-	4444	68	636	59	85	-	1	2	30	2	-	22	-	6	-	84	106	593	-	
St. Bride	W	-	6594	85	79	15	25	-	-	-	1	1	-	-	-	-	-	12	34	-	-	
Allhallows Barking	-	-	10422	100	111	12	26	-	-	-	1	2	-	-	-	-	-	28	34	-	-	
Broad Street	H	-	3377	32	31	8	10	-	-	-	-	1	-	-	-	-	-	2	4	-	-	
City of London Asylum, Stone	-	-	-	-	30	-	7	-	-	-	-	-	-	-	-	-	-	-	-	30	-	

Note.—The letters placed against the names of the sub-districts denote Public Institutions situated therein, namely:—W—Workhouse; WH—Workhouse Establishment receiving inmates from other Districts than that in which it stands; H—Hospital; L—Lunatic Asylum; L*—Private Lunatic Asylum in which paupers are received. For detailed list of the several Institutions, see Table 22.

TABLE 19 (continued).—LONDON.—POPULATION; and BIRTHS and DEATHS in REGISTRATION SUB-DISTRICTS, during the 52 Weeks of 1894.

REGISTRATION SUB-DISTRICTS.		Enumerated Population, 1891.	Total Births in 52 Weeks.	Total Deaths in 52 Weeks.	The DEATHS registered in the 52 Weeks include														Inquest Cases.	Deaths in Public Institutions.	Unclassified Causes of Death.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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					Infants under 1 Year of Age.	Persons aged 60 Years and upwards.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping- cough.	Typhus Fever.	Enteric (or Typhoid) Fever.	Simple con- tinued Fever.	Diarrhoea.	Cholera.	Violence.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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TABLE 20. —OUTER RING (excluding Deaths of Londoners in Metropolitan Workhouses, Hospitals, and Asylums) —AREA ; POPULATION ; BIRTHS and DEATHS Registered during the 52 Weeks of 1894.

District and Sub-district Numbers.		REGISTRATION SUB-DISTRICTS.	Area in Acres	Enumerated Population, 1891.	BIRTHS.	DEATHS.	The DEATHS registered in the 52 Weeks include																	
							Deaths of		Deaths from															
							Infants under 1 Year of Age.	Persons aged 60 Years & upwards.	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping-cough.	Fever.	Diarrhoea.	Cholera.	Violence.	Inquest Cases.	Deaths in Public Institutions.	Unrecorded Causes of				
LONDON—OUTER RING							368,749	1,422,063	45,152	20,745	5574	5187	75	666	142	712	687	209	531	22	657	1215	1954	45
30 : 1	Carshalton WHH - -	12228	26108	601	261	63	74	-	14	2	3	16	4	4	-	14	14	10						
2	Epsom, part of * WHH - -	10423	12503	237	164	29	66	-	-	-	1	1	-	-	-	9	11	54						
37 : 1	Godstone, part of * W - -	2754	1598	57	20	4	5	-	-	-	-	-	1	-	-	-	1	1						
38 : 1	Croydon WHHH - -	20851	125699	3333	1854	413	588	-	54	13	44	84	10	23	1	41	128	216						
2	Mitcham w - -	11697	23088	611	234	63	63	-	1	1	13	4	2	8	-	8	25	6						
39 : 1	Wimbledon HHH - -	3220	25761	787	507	80	81	-	6	1	10	9	3	8	-	9	22	16						
2	Kingston WH - -	8071	44765	1295	662	147	217	-	26	-	12	10	5	9	-	30	48	103						
3	Esher, part of * HH - -	6901	12059	338	143	36	43	-	7	1	-	-	3	3	-	9	14	5						
4	Hampton H - -	4565	18252	512	229	62	58	-	7	1	4	6	1	2	-	11	21	6						
40 : 1	Richmond WH - -	2163	25389	591	384	75	136	-	5	-	9	10	-	3	-	16	23	50						
2	Mortlake H - -	2823	18159	414	180	44	87	-	3	1	3	5	2	2	-	9	21	3						
41 : 1	Bromley HHH - -	9127	23815	655	339	71	108	-	5	3	20	13	9	9	-	12	14	84						
2	Beckenham H - -	6542	21969	513	241	59	66	-	6	-	4	15	3	4	-	6	7	4						
3	Chislehurst, pt. of * WHH - -	14307	20372	543	290	52	109	-	1	-	9	6	3	8	-	7	17	74						
42 : 1	Bexley HHH - -	12540	30590	1001	381	110	169	-	5	2	10	13	2	12	-	14	25	3						
2	Dartford Work., pt. of * - -	-	-	7	18	-	10	-	-	-	-	-	-	-	-	2	2	13						
124 : 1	Sunbury w - -	11054	13671	395	174	30	52	-	4	-	-	15	-	-	-	13	14	1						
2	Staines WH - -	13277	13221	362	199	45	69	-	6	3	1	7	-	2	-	4	11	32						
125 : 1	Hillingdon WHH - -	6035	12237	359	202	41	75	-	5	4	1	9	1	2	-	6	10	39						
2	Uxbridge - -	6172	5417	152	72	14	30	-	-	-	2	2	-	-	-	3	-	-						
3	Hayes WH - -	14537	12616	528	151	40	49	-	7	1	5	11	-	3	-	4	5	14						
126 : 1	Isleworth WHH - -	6967	26273	756	464	123	151	-	3	3	4	17	2	6	-	8	17	108						
2	Twickenham HH - -	2415	16927	483	297	53	53	-	12	1	15	9	1	2	-	6	14	7						
3	Brentford HHHH - -	4318	37777	1001	493	129	134	1	11	5	13	14	3	17	-	17	33	19						
4	Chiswick - -	1245	21963	695	320	94	75	-	12	3	4	3	6	11	-	9	29	-						
5	Acton WH - -	6132	30945	1002	454	149	99	-	16	5	8	17	2	13	-	7	21	6						
127 : 1	Harrow HHH - -	13809	15715	375	209	48	60	-	2	-	3	3	1	5	-	15	18	9						
2	Edgware HH - -	6994	3844	103	60	13	16	-	3	-	2	1	1	-	-	1	5	2						
3	Willenden HHH - -	4383	61265	2265	918	299	155	2	45	7	16	32	11	34	-	10	83	23						
4	Hendon WH - -	8382	15843	632	300	73	75	-	6	1	1	13	2	5	-	10	23	74						
128 : 1	South Mimms H - -	15599	8474	262	119	26	45	-	1	-	4	2	-	3	1	4	5	5						
2	Barret WHH - -	5441	11773	579	166	27	64	-	2	-	2	3	1	2	-	5	11	43						
3	Finchley HHH - -	4688	25820	727	310	85	71	1	8	-	6	15	2	4	-	9	18	7						
129 : 1	Hornsey HH - -	3039	61097	1582	636	142	220	-	10	1	34	23	8	19	-	26	44	12						
2	Tottenham H - -	4642	97174	3311	1375	497	554	1	23	9	42	60	21	46	8	58	141	89						
3	Edmonton WHH - -	7489	38351	1199	625	160	166	-	12	3	27	36	9	28	1	16	37	145						
4	Enfield WHH - -	12639	31803	1067	401	104	114	-	11	2	10	11	5	5	3	17	31	32						
5	Waltham Abbey - -	11017	6066	169	87	21	8	-	4	1	4	3	-	1	-	17	17	-						
6	Cheshunt H - -	5480	9620	321	134	33	34	-	-	1	4	7	-	1	-	2	3	4						
135 : 1	Hatfield, part of * W - -	3306	582	11	6	1	2	-	-	-	-	-	-	-	-	-	-	-						
137 : 1	Bushey H - -	9331	7737	207	83	21	23	-	6	-	-	3	-	1	-	1	1	2						
2	Watford Work., pt. of * - -	-	-	-	13	-	-	-	-	-	-	-	-	-	-	-	-	7						
136 : 1	Stratford H - -	1100	42983	1635	709	222	112	1	47	6	56	8	8	12	-	44	54	23						
2	Plaistow HHHH - -	1242	58030	2456	1063	335	148	27	61	9	77	29	16	43	-	17	31	82						
3	Canning Town H - -	1538	54750	2398	1077	338	88	1	91	15	37	45	11	33	-	52	71	38						
4	Forest Gate w - -	896	49140	1331	671	177	154	2	30	5	49	17	10	12	1	8	17	2						
5	East Ham w - -	3286	32713	1602	574	155	87	4	35	6	60	10	7	19	1	12	16	3						
6	Leyton WHHHL - -	4394	70188	2360	1290	297	410	-	34	12	38	24	13	40	-	18	24	425						
27	Walthamstow HHL - -	6501	57330	2110	798	267	160	-	9	3	36	23	12	27	4	19	31	4						
137 : 1	Chigwell, part of * H - -	11779	12941	334	152	42	48	-	-	1	4	10	3	2	1	6	7	4						
2	Epping Work., pt. of * - -	-	-	4	2	-	1	-	-	-	-	-	-	-	-	-	-	2						
139 : 1	Romford, part of * W - -	6556	4324	161	105	21	35	4	4	2	4	2	-	4	-	1	4	35						
2	Ilford - -	8493	10913	366	133	54	31	1	5	1	4	1	1	4	1	4	6	-						
3	Barking Town H - -	3814	14301	687	197	84	28	5	-	2	16	1	3	20	-	5	7	7						
	Met. Asylum Hospitals	-	-	-	-	37	2	1	19	1	4	10	-	1	-	-	-	37						
	Cane Hill Asylum	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	1						
	Sm.-pox Hosp. Highgate	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-						
	London Fever Hospital	-	-	-	-	2	-	-	-	1	1	-	-	-	-	-	-	2						

* The parts of sub-districts included within that portion of the Metropolitan Police District which forms the Outer Ring are as follows:— 50 : 2, Epsom sub-district, except the parishes of Ashstead and Headley (pop. 1766) ; 37 : 1, the parishes of Warringham and Farley in Godstone sub-district ; 39 : 3, Esher sub-district, except the parish of Esher (pop. 2232) ; 41 : 3, Chislehurst sub-district, except the parishes of Chislefield, Cudham and Knockholt (pop. 3097) ; 135 : 1, the parish of Northaw in Hatfield sub-district ; 137 : 1, Chigwell sub-district, except the parish of Theydon Bois (pop. 1079) ; 139 : 1, the parish of Dagenham in Romford sub-district ; also deaths in Workhouses belonging to the Outer Ring in 42 : 2 ; Dartford ; 137 : 2, Watford ; and 137 : 2, Epping, sub-districts.

TABLE 21.—Temperature at Greenwich; Population; Total Deaths, and Deaths at Seven groups of Ages, in London, in each Week of 1894.

POPULATION estimated to the middle of 1894 - -					4,349,166	112,405	405,584	1,329,411	1,472,999	750,156	260,691	17,920
Number of Week.	WEEK ENDING	TEMPERATURE.			AGES AT DEATH.							
		Mean.	Highest Reading.	Lowest Reading.	ALL AGES.	Under 1 Year.	1-5	5-20	20-40	40-60	60-80	80 and-upwards.
	YEAR (of 52 Weeks) }	49°·9	86°·0	12°·8	77,039	18,732	12,634	4,954	9,770	13,737	14,239	2,973
	First Quarter (13 Weeks).	41°·4	68°·0	12°·8	22,977	4,934	3,919	1,443	2,883	4,108	4,673	1,017
	Second (13 Weeks).	53°·3	82°·1	32°·3	18,822	4,044	3,879	1,268	2,384	3,511	3,285	651
	Third (13 Weeks).	58°·6	86°·0	33°·3	17,240	5,220	2,501	1,161	2,062	2,980	2,797	519
	Fourth (13 Weeks).	46°·4	64°·9	30°·3	18,000	4,534	2,335	1,032	2,441	3,538	3,484	786
1	1894. January 6	26°·5	37°·7	12°·8	2088	444	347	132	243	370	410	92
2	" 13	37°·5	52°·1	18°·1	2461	504	385	140	280	450	585	117
3	" 20	45°·0	51°·0	37°·0	1975	383	332	98	230	371	449	112
4	" 27	41°·6	52°·2	25°·3	1655	367	288	93	208	277	334	88
5	February 3	42°·0	52°·0	32°·2	1620	353	245	118	216	297	319	72
6	" 10	46°·0	55°·1	35°·7	1532	349	238	88	190	276	301	56
7	" 17	41°·0	54°·3	30°·3	1552	357	275	111	245	272	323	53
8	" 24	34°·3	49°·1	24°·4	1663	384	267	123	226	323	338	68
9	March 3	44°·0	55°·9	31°·5	1748	403	293	95	241	298	345	76
10	" 10	44°·2	55°·3	30°·4	1700	352	298	106	184	275	336	76
11	" 17	42°·6	56°·5	30°·2	1608	333	312	119	207	305	301	75
12	" 24	43°·1	57°·0	29°·3	1689	370	312	130	214	287	340	74
13	" 31	48°·2	68°·0	29°·4	1736	335	356	130	214	287	340	74
14	April 7	50°·6	69°·0	36°·7	1587	363	320	104	197	265	263	70
15	" 14	55°·2	75°·8	39°·4	1609	361	327	112	210	265	281	53
16	" 21	48°·7	65°·0	37°·9	1509	337	298	92	187	295	259	41
17	" 28	49°·5	62°·0	34°·3	1543	355	321	99	179	303	250	36
18	May 5	48°·8	62°·5	36°·4	1428	278	331	96	180	247	252	44
19	" 12	51°·0	64°·7	39°·6	1531	286	343	100	216	267	267	52
20	" 19	54°·5	70°·0	38°·2	1463	339	316	101	154	209	284	60
21	" 26	48°·2	70°·4	32°·3	1440	316	322	108	163	234	249	48
22	June 2	50°·1	65°·0	38°·1	1366	291	277	84	181	251	235	47
23	" 9	56°·1	68°·1	46°·3	1398	305	323	94	182	232	212	45
24	" 16	56°·3	74°·0	45°·1	1336	261	252	80	188	269	238	48
25	" 23	58°·9	75°·4	47°·9	1330	278	216	94	176	255	261	50
26	" 30	63°·8	82°·1	48°·5	1282	269	223	104	171	219	234	57
27	July 7	66°·0	86°·0	50°·2	1314	313	225	90	180	250	218	38
28	" 14	59°·2	74°·0	49°·0	1356	410	199	84	179	215	230	39
29	" 21	59°·1	72°·0	50°·4	1405	464	220	84	158	242	197	40
30	" 28	62°·8	79°·4	51°·8	1437	457	228	98	149	237	230	38
31	August 4	62°·1	78°·0	52°·1	1464	480	216	105	177	214	228	44
32	" 11	60°·4	74°·1	51°·9	1450	497	219	104	140	221	227	42
33	" 18	59°·2	80°·5	45°·2	1423	475	229	83	169	241	193	38
34	" 25	57°·4	73°·2	44°·2	1284	416	184	85	144	232	184	39
35	September 1	60°·8	79°·0	47°·5	1198	361	146	84	150	208	214	35
36	" 8	52°·7	68°·9	40°·4	1175	352	146	80	155	197	214	31
37	" 15	54°·8	66°·8	44°·1	1241	353	159	88	156	209	223	53
38	" 22	55°·9	68°·2	48°·8	1211	331	159	81	145	228	224	43
39	" 29	52°·5	66°·3	33°·3	1277	311	171	95	160	286	215	39
40	October 6	52°·8	62°·0	42°·5	1287	331	160	83	159	246	253	55
41	" 13	53°·0	62°·0	44°·6	1291	321	163	81	181	262	232	51
42	" 20	44°·3	56°·0	30°·5	1326	350	182	85	170	236	237	66
43	" 27	50°·3	61°·2	35°·0	1481	391	193	78	187	269	294	73
44	November 3	54°·0	64°·9	45°·7	1372	398	169	82	184	226	253	60
45	" 10	50°·3	59°·5	40°·5	1249	337	125	92	166	229	250	50
46	" 17	47°·0	55°·5	40°·4	1275	341	172	92	163	228	236	43
47	" 24	44°·0	56°·0	31°·1	1326	316	167	86	207	246	250	54
48	December 1	40°·3	47°·8	31°·5	1347	364	207	78	165	249	234	50
49	" 8	39°·8	43°·6	30°·3	1614	370	203	86	248	321	313	63
50	" 15	45°·4	52°·9	31°·9	1550	347	207	92	213	234	341	66
51	" 22	43°·9	51°·7	31°·8	1448	316	185	77	193	297	314	66
52	" 29	43°·0	50°·0	31°·6	1434	352	192	70	205	254	277	84

TABLE 22.—Deaths in Public Institutions,

			DEATHS.						DEATHS.		
			TOTAL.	Males.	Females.				TOTAL.	Males.	Females.
TOTAL DEATHS IN PUBLIC INSTITUTIONS			22117	12304	9813						
WORKHOUSES AND WORKHOUSE INFIRMARIES—			10411	5746	4665						
METROPOLITAN ASYLUM HOSPITALS—			2066	1005	1061						
GENERAL HOSPITALS—			6791	3934	2857						
HOSPITALS FOR SPECIAL DISEASES—			731	418	313						
LYING-IN HOSPITALS—			18	—	18						
MILITARY AND NAVAL HOSPITALS—			74	39	35						
HOSPITALS FOR FOREIGNERS—			144	138	8						
LUNATIC AND IMBECILE ASYLUMS—			145	99	46						
			1787	927	860						
PUBLIC INSTITUTIONS.			SUB-DISTRICTS.								
WORKH. ESTABLISHMENTS.											
Paddington Workhouse—1a; 1. St. Mary Paddington			39	18	21						
Paddington Infirmary—1a; 1. St. Mary Paddington			127	59	68						
Kensington Workhouse—1b; 1. Kensington Town—			5	2	3						
Kensington Infirmary—1b; 1. Kensington Town—			451	235	216						
Marylebone Infirmary—1b; 1. Kensington Town—			435	224	211						
Fulham Workhouse—2; 3. Fulham—			18	11	7						
Fulham Infirmary—2; 3. Fulham—			382	205	177						
Chelsea Workhouse—3; 2. Chelsea North—			32	14	18						
Chelsea Infirmary—3; 2. Chelsea North—			207	110	97						
St. George's Workhouse—4; 1. Mayfair—			13	7	6						
St. George's Infirmary—4; 1. Mayfair—			314	192	122						
St. George's Workhouse—4; 2. Belgrave—			8	4	4						
Westminster Workhouse—5; 1. St. James Westminster—			65	35	30						
Marylebone Workhouse—6; 1. Rectory Marylebone—			57	21	36						
Hampstead Workhouse—7; 1. Hampstead—			66	31	35						
Central London Sick Asylum—8; 2. Tottenham Court—			112	94	65						
Pancras Workhouse—8; 5. Camden Town—			269	120	149						
Pancras Infirmary—8; 6. Kentish Town—			293	173	120						
St. Pancras Casual Wards Workhouse—9; 6. Kentish Town—			—	—	—						
(St. John's Road)—9; 1. Upper Holloway—			29	14	15						
Islington Infirmary—9; 1. Upper Holloway—			474	250	224						
Islington Workhouse—9; 1. Upper Holloway—			4	1	3						
Islington Workh. Schools—9; 1. Upper Holloway—			—	—	—						
Holborn Infirmary—9; 1. Upper Holloway—			265	173	92						
Hackney Workhouse—10; 4. Hackney—			7	6	1						
Hackney Infirmary—10; 4. Hackney—			370	188	184						
City of London Workhouse—10; 4. Hackney—			16	9	7						
Bethnal Green Workhouse—10; 5. South Hackney—			2	2	—						
St. Giles's Workhouse—11; 2. St. Giles South—			141	81	60						
Strand Workhouse—12; 3. St. Clement Danes—			12	8	4						
Strand Workhouse—12; 3. St. Edmund—			90	43	47						
Holborn Workhouse—13; 2. St. Andrew Eastern—			20	16	4						
Holborn Workhouse—13; 2. Mitton—			69	33	36						
City of London Workh.—14; 2. St. Bride—			7	3	4						
Holborn Workhouse—15; 2. Hoxton New Town—			270	146	124						
Shoreditch Workhouse—15; 4. Haggerston—			1	1	—						
Shoreditch Infirmary—15; 4. Haggerston—			361	194	167						
Bethnal Green Workh.—16; 3. Bethnal Green East—			392	224	168						
Whitechapel Infirmary—17; 2. Mile End New Town—			363	237	126						
St. George-in-the-East Workhouse—18; 2. St. John—			2	1	1						
St. George-in-the-East Infirmary—18; 2. St. John—			277	134	143						
St. George-in-the-East Casual Wards—18; 2. St. John—			—	—	—						
Stepney Work. (temp.)—19; 2. Radcliff—			1	—	1						
Mile End Workhouse—20; 2. Mile End O. T. East—			5	3	2						
Mile End Infirmary—20; 2. Mile End O. T. East—			254	140	114						
Whitechapel Workhouse—20; 2. Mile End O. T. East—			5	—	5						
City of London Workh. (part of)—20; 2. Mile End O. T. East—			53	8	45						
Infirmary—21; 2. Bromley—			106	64	42						
PUBLIC INSTITUTIONS.			SUB-DISTRICTS.								
WORKH. ESTABLISHMENTS.—cont.											
Poplar and Stepney Sick Asylum—21; 2. Bromley—			602	337	265						
Stepney W. (Aged & Infirm)—21; 2. Bromley—			93	63	30						
Poplar Workhouse—21; 3. Poplar—			50	21	29						
Poplar Infirmary—21; 3. Poplar—			—	—	—						
St. Saviour's Workhouse—22; 1. Christch. Southwark—			13	13	—						
Do. Work, St. George's—22; 4. Borough Road—			18	9	9						
Do. Work, Newington—22; 7. St. Peter Walworth—			100	48	52						
St. Olave's Workhouse—23; 1. St. Olave—			34	17	17						
St. Olave's Workhouse—23; 2. Leather Market—			28	18	10						
St. Olave's Infirmary—23; 4. Rotherhithe—			274	161	113						
Lambeth Workhouse—24; 4. Lambeth Church 2nd—			49	34	15						
Lambeth Infirmary—24; 4. Lambeth Church 2nd—			455	260	195						
Lambeth Workhouse—24; 4. Lambeth Church 2nd—			1	1	—						
Lambeth Workh. Schs.—24; 8. Norwood—			4	3	1						
Wandsworth Infirmary—25; 2. West Battersea—			345	167	178						
Westminster Indus. School—25; 2. West Battersea—			1	1	—						
Wandsworth Workhouse—25; 4. Wandsworth—			20	9	11						
St. Anne's Home (Pancras Workhouse)—25; 6. Streatham—			41	41	—						
Chelsea Workhouse—25; 6. Streatham—			2	2	—						
Camberwell Workhouse—26; 2. Camberwell—			116	65	61						
Camberwell Infirmary—26; 2. Camberwell—			264	155	109						
St. Saviour's Infirmary—26; 2. Camberwell—			474	257	217						
Camberwell W. (Gordon Road)—26; 3. Peckham—			68	89	29						
Greenwich Workhouse—27; 5. Greenwich East—			94	37	55						
Greenwich Infirmary—27; 5. Greenwich East—			292	168	124						
Workhouse School (St. Mary's R.C.)—28; 1. Eltham—			1	1	—						
Lewisham Workhouse—28; 3. Lewisham—			110	63	47						
Lewisham Infirmary—28; 3. Lewisham—			17	10	7						
Woolwich Workhouse—29; 5. Woolwich—			—	—	—						
Woolwich Infirmary—29; 5. Plumstead East—			167	101	66						
METN. ASYLUM HOSPITALS.											
Western—2; 3. Fulham—			321	149	172						
North-Western—7; 1. Hampstead—			451	212	239						
Eastern—10; 4. Hackney—			375	185	190						
South Wharf Shelters—23; 4. Rotherhithe—			2	—	—						
South-Western—24; 7. Brixton—			296	144	152						
Fountain Hospital—25; 6. Streatham—			117	57	60						
South-Eastern—27; 2. Deptford Central—			271	141	130						
Hospital Ships—42; 2. Dartford—			81	84	47						
Hosp. Camp—42; 2. Dartford—			6	2	4						
North-Eastern—129; 2. Tottenham—			127	69	58						
Northern—129; 3. Edmonton—			19	12	7						
GENERAL HOSPITALS.											
St. Mary's—1a; 2. St. John Paddington—			315	203	187						
Queen's Jubilee—1b; 2. Brompton—			6	5	1						
West London—2; 2. St. Paul Hammersm.—			177	112	65						
St. Camillo's—3; 2. Chelsea North—			3	3	—						
Victoria (Children)—3; 3. Chelsea South—			144	79	65						
Cheyne (Children)—3; 3. Chelsea South—			9	4	5						
St. George's—4; 2. Belgrave—			382	338	144						
Belgrave (Children)—4; 2. Belgrave—			11	7	4						
Westminster—4; 4. St. Margaret Westm.—			281	134	97						
Home Hospital—6; 2. St. Anne Soho—			2	2	—						
All Saints Hospital—6; 1. All Souls Marylebone—			1	1	—						
Middlesex—6; 1. All Souls Marylebone—			327	178	149						
St. Elizabeth's Home—6; 1. All Souls Marylebone—			2	—	2						
Samaritan Free—6; 3. St. Mary Marylebone—			11	—	11						

registered during the 52 Weeks of 1894.

PUBLIC INSTITUTIONS.	SUB-DISTRICTS.	DEATHS.			PUBLIC INSTITUTIONS.	SUB-DISTRICTS.	DEATHS.		
		TOTAL.	Males.	Females.			TOTAL.	Males.	Females.
GENERAL HOSPITALS—continued.					HOSPITALS FOR SPECIAL DISEASES—continued.				
For Incurables Children	6; 5. St. John	2	—	2	Male Lock Hospital	5; 2. St. Anne Soho	2	2	—
St. Peter's Home, Kilburn	7; 1. Hampstead	18	1	17	St. John's (Skin Dis.)	5; 2. St. Anne, Soho	2	1	1
Home Hospital	7; 1. Hampstead	16	9	7	London Throat	6; 1. All Souls, Maryleb.	2	1	1
Medical & Surgical Home	7; 1. Hampstead	1	1	—	Home for Consump. Fem.	6; 3. St. Mary Maryleb.	4	—	4
Incurables (Friedenheim)	7; 1. Hampstead	76	40	36	Epilepsy, &c.	6; 5. St. John Maryleb.	1	1	—
St. Luke's House	8; 1. Regent's Park	38	13	25	North London Consumpn.	7; 1. Hampstead	37	27	10
University College	8; 2. Tottenham Court	237	165	122	St. Saviour's (Cancer)	8; 1. Regent's Park	5	—	5
Home Hospital	8; 2. Tottenham Court	7	2	5	All Saints' Inst. (Women)	8; 2. Tottenham Court	1	—	1
Medical & Surgical Home	8; 2. Tottenham Court	1	1	—	Central London Throat and Ear	8; 3. Gray's Inn Lane	5	2	3
Royal Free	8; 3. Gray's Inn Lane	139	89	41	Central Lond. Ophthalmic	8; 3. Gray's Inn Lane	1	1	—
Temperance	8; 4. Somers Town	69	36	33	For Women	8; 4. Somers Town	17	—	17
North-West London	8; 5. Camden Town	44	23	21	London Fever	9; 2. Islington South-west	14	9	5
Great Northern Central	9; 1. Upper Holloway	136	75	61	Royal Westm. Ophthal.	12; 1. St. Martin-in-the-Fields	1	1	—
Mildmay Memorial	9; 4. Highbury	18	7	6	St. Peter's (Stone, &c.)	12; 2. St. Mary-le-Strand	13	13	—
Invalid Home	9; 4. Highbury	1	—	1	National (Par. & Epil.)	13; 1. St. George the Martyr	46	24	22
Invalid Asylum	10; 1. Stoke Newington	1	—	1	Alexandra (Hip Diseases)	13; 1. St. George the Martyr	14	10	4
Metropolitan Free	10; 3. West Hackney	80	44	36	City Orthopaedic	13; 2. St. Andrew Eastern	2	—	2
Jewish Home for Incur.	10; 5. South Hackney	6	1	5	Royal, for Dis. of Chest	13; 7. City Road	46	33	13
Charing Cross	12; 1. St. Martin in-the-Fields	168	103	65	Royal London Ophthalmic	14; 6. Broad Street	3	1	2
King's College	12; 3. St. Clement Danes	191	106	85	City of London for Chest Dis.	16; 3. Bethnal Green East	115	71	44
London Homeopathic	13; 1. St. George the Martyr	23	15	8	LYING-IN HOSPITALS.				
St. John and St. Elizabeth	13; 1. St. George the Martyr	24	—	24	Queen Charlotte's	6; 3. St. Mary, (Women Marylebone) Children	8	—	8
For Children	13; 1. St. George the Martyr	246	135	111	British	11; 2. St. Giles (Women South) Children	29	18	11
City Police	14; 1. St. Botolph	2	2	—	City of London	13; 7. City Road (Women) Children	3	—	3
St. Bartholomew's	14; 3. St. Sepulchre	593	393	200	East End Mothers' Home	20; 1. Mile End (Women O.T.W.) Children	1	—	1
Convent	15; 1. Shoreditch South	5	3	2	General (York Road)	24; 2. Waterloo 2nd Children	15	9	6
North-Eastern (Children)	15; 4. Haggerston	105	55	50	Clapham Maternity	24; 3. Kennington (Women) Children	4	—	4
Mildmay Medical Mission	16; 1. Bethnal Green N.	26	9	17	MILITARY AND NAVAL HOSPITALS.				
London	17; 3. Whitechapel Church	1028	583	445	Station Hospitals	4; 3. St. John Westminster	11	11	—
East London (Children)	19; 1. Shadwell	325	190	145	Seamen's	27; 5. Greenwich East	105	13	2
Poplar	21; 2. Bromley	43	34	9	Herbert	29; 1. Charlton	21	18	3
Evelina (Children)	22; 4. Borough Road	153	87	71	Garrison Female	29; 3. Woolwich Arsenal	4	1	3
Guy's	23; 1. St. Olave	529	330	199	Arsenal Infirmary	29; 3. Woolwich Arsenal	2	2	—
Cottage Hospital	23; 4. Rotherhithe	1	1	—	Auxiliary Hospital	29; 3. Woolwich, Arsenal	1	1	—
Royal Infirmary (Women and Children)	24; 1. Waterloo 1st	73	24	49	HOSPITALS FOR FOREIGNERS.				
St. Thomas's	24; 3. Lambeth Church 1st	554	342	212	German	10; 4. Hackney	93	61	35
British Home for Incurables	24; 8. Norwood	1	—	1	French	11; 3. St. Giles North	38	29	9
Bolingbroke House Hosp.	25; 2. West Battersea	8	4	4	Italian	13; 1. St. George the Martyr	11	9	2
The Hostel of God	25; 3. Clapham	22	5	17	LUNATIC ASYLUMS.*				
British Home for Incurables	25; 3. Clapham	2	—	2	St. Luke's Hospital	13; 7. City Road	17	6	11
Royal, for Incurables	25; 4. Wandsworth	12	5	7	Hoxton House *	15; 1. Shoreditch South	51	23	28
Cottage Home	25; 4. Wandsworth	9	—	9	Bethnal House *	16; 3. Bethnal Green East	37	20	17
Miller Hospital	27; 4. Greenwich West	17	10	7	Grove Hall *	21; 1. Bow	21	19	2
Cottage Hospital	28; 1. Eltham	5	4	1	Bethlehem Hospital	22; 5. London Road	14	8	6
St. John's	28; 2. Lee	13	5	8	Peckham House *	26; 2. Camberwell	37	20	17
Home for Sick Children	28; 4. Sydenham	14	10	4	Camberwell House *	26; 2. Camberwell	55	33	22
Cottage Hospital	29; 1. Charlton	11	7	4	Lond. Co. Asyl., Banstead	30; 1. Carshalton	167	88	79
Cottage Hospital	29; 3. Woolwich Arsenal	6	3	3	Metrop. Asyl., Catterham	37; 1. Godstone	186	94	92
HOSPITALS FOR SPECIAL DISEASES.					Lond. Co. Asyl., Cane Hill	88; 1. Croydon	178	89	89
Lock Hospital	10; 1. St. Mary Paddington	3	—	3	Metrop. Asyl., Darenth	42; 2. Dartford	130	54	76
Consumption & Diseases of Chest	16; 2. Brompton	159	96	63	City of Lond. Asyl., Stone	42; 2. Dartford	30	22	8
Cancer	3; 2. Chelsea North	111	89	22	Lond. Co. Asyl., Hanwell	125; 3. Hayes	123	74	49
For Women	8; 2. Chelsea North	93	24	69	Lond. Co. Asyl., Colney Hatch	128; 3. Finchley	169	83	86
Gordon Hosp. for Fistula	4; 2. Belgrave	4	—	4	Metrop. Asyl., Levensden	137; 2. Watford	214	118	96
Grosvenor (Wom. & Child.)	4; 3. St. John Westminster	1	—	1	Metro. Asylum, Claybury	189; 2. Ilford	308	176	132
Diseases of Throat	5; 1. St. James Westm.	2	—	2					
Hospital for Paralysis	5; 1. St. James, Westm.	9	7	2					
For Women	5; 2. St. Anne Soho	1	—	1					
Heart Diseases	5; 2. St. Anne Soho	9	—	9					
		8	5	3					

* LUNATIC ASYLUMS.—Private Lunatic Asylums are excluded from this list, except those in which pauper lunatics are received, which are marked thus *.

† The British Home for Incurables, Norwood, was opened on 18 June 1894 in substitution for the British Home for Incurables, Clapham.

TABLE 23. LONDON.—Weekly Deaths from the principal ZYMOTIC DISEASES during the Four
Fifty Years

	SMALL-POX.				MEASLES.				SCARLET FEVER.				DIPHTHERIA.			
	1891	1892	1893	1894	1891	1892	1893	1894	1891	1892	1893	1894	1891	1892	1893	1894
YEAR -	8	41	206	89	1807	3393	1661	3293	589	1174	1596	962	1361	1885	3265	2670
March Quar.	3	7	38	7	452	826	317	787	168	159	335	274	355	328	639	725
June "	4	24	100	34	473	1610	439	1747	122	261	336	285	311	437	677	651
Sept. "	1	6	49	43	248	575	459	459	130	365	458	228	330	437	860	641
Dec. "	-	4	19	5	634	382	446	300	169	389	467	175	365	633	1089	653
Week.																
1 -	-	-	-	1	76	82	44	60	16	17	32	34	28	25	47	66
2 -	-	1	2	1	45	83	40	65	24	9	35	26	23	29	61	55
3 -	-	-	1	-	38	76	39	45	15	13	26	25	17	23	37	48
4 -	-	-	-	-	27	60	26	35	11	9	35	9	25	24	53	52
5 -	-	-	-	5	15	39	12	21	22	14	30	23	34	27	43	72
6 -	-	-	1	-	20	47	15	42	9	14	19	22	29	18	62	55
7 -	-	-	-	-	24	68	21	59	13	11	26	24	34	15	60	58
8 -	-	-	4	2	30	52	20	47	13	10	21	20	31	27	51	42
9 -	1	-	5	1	32	54	20	66	10	4	15	17	18	34	37	59
10 -	-	2	6	-	44	82	21	74	5	12	30	19	33	31	65	53
11 -	-	2	3	1	32	73	14	96	12	13	17	13	26	30	40	55
12 -	-	-	6	-	45	81	30	137	9	17	30	23	24	15	36	57
13 -	2	2	5	-												
14 -	-	2	2	2	38	102	23	132	11	19	19	20	26	34	38	63
15 -	-	-	3	-	48	113	24	112	11	14	18	29	26	33	44	50
16 -	-	-	2	3	51	127	44	125	6	17	24	29	23	29	47	53
17 -	-	-	2	6	38	156	34	131	10	19	28	25	23	17	50	62
18 -	-	-	1	11	38	158	26	125	9	20	21	30	24	31	54	58
19 -	-	3	13	3	35	136	20	152	6	25	15	25	19	24	68	55
20 -	-	4	4	3	41	140	32	175	10	13	26	20	21	42	51	56
21 -	1	1	16	7	41	122	35	165	10	23	29	20	27	39	41	41
22 -	-	1	3	9	42	120	29	148	7	12	27	14	24	40	51	36
23 -	-	1	-	7	34	132	38	169	7	21	24	17	21	37	39	34
24 -	-	1	1	6	18	111	45	122	15	29	38	19	28	34	62	43
25 -	-	1	11	5	23	100	48	99	8	28	29	18	31	39	68	44
26 -	-	4	3	-	26	93	41	92	12	21	38	19	18	38	64	56
27 -	1	1	9	1	31	83	52	88	10	21	35	17	21	30	54	43
28 -	-	-	4	2	30	74	56	57	7	23	34	16	25	43	52	45
29 -	-	-	10	1	26	77	53	57	10	20	36	24	26	37	66	36
30 -	-	1	8	1	21	67	36	53	10	24	36	29	30	25	72	52
31 -	-	-	3	5	29	64	42	50	5	33	44	18	24	42	64	57
32 -	-	-	2	10	17	56	43	33	6	21	26	19	22	35	63	62
33 -	-	-	3	4	20	36	55	34	13	33	48	14	24	37	63	57
34 -	-	-	3	2	17	42	30	27	11	28	33	17	24	38	56	43
35 -	-	-	2	7	10	21	31	18	5	38	30	13	24	34	56	33
36 -	-	-	-	6	11	18	23	13	15	34	36	13	17	37	65	39
37 -	-	-	1	3	12	17	18	9	15	31	25	15	32	36	65	55
38 -	-	-	2	-	9	8	6	13	10	27	34	15	29	43	88	52
39 -	-	-	2	1	15	12	14	7	13	32	41	18	32	50	96	67
40 -	-	-	1	1	17	16	18	9	10	33	39	9	29	51	74	66
41 -	-	-	2	-	18	20	22	10	13	24	34	12	25	46	86	54
42 -	-	-	-	-	19	28	20	8	10	28	40	18	29	41	84	61
43 -	-	-	-	2	18	22	16	24	9	39	33	17	30	56	83	49
44 -	-	-	1	1	31	32	33	15	13	36	43	10	25	47	88	54
45 -	-	-	2	1	37	29	42	13	8	32	47	9	24	51	103	42
46 -	-	-	1	-	49	30	48	22	13	32	37	8	30	29	91	44
47 -	-	1	3	-	53	23	31	21	15	29	42	14	26	46	90	48
48 -	-	2	-	-	64	35	39	29	19	31	34	19	27	39	74	54
49 -	-	-	4	-	45	30	34	36	20	23	30	18	33	58	89	57
50 -	-	1	2	-	46	31	45	32	8	35	29	13	30	59	85	53
51 -	-	-	1	1	83	32	49	35	17	25	32	14	26	60	63	36
52 -	-	-	-	1	154	49	49	46	14	22	27	14	37	50	79	35

years 1891-1894; and the AVERAGE WEEKLY Numbers from these DISEASES during the years 1860-1894.

HOOPING-COUGH.				FEVER.				DIARRHŒA.				WEEKLY AVERAGE in 50 Years, 1845-94.							YEAR.
1891	1892	1893	1894	1891	1892	1893	1894	1891	1892	1893	1894	Small-pox.	Measles.	Scarlet Fever.	Diphtheria.	Whooping- cough.	Fever.	Diarrhœa.	
1876	2477	2330	2097	597	467	719	653	2437	2546	3446	1780	16	36	41	17	48	34	54	
76	1473	531	934	106	80	105	145	173	211	206	171	19	33	34	15	67	33	14	March Qr.
759	630	592	609	144	90	122	131	218	326	757	140	20	43	29	15	57	30	21	June "
74	204	619	349	127	130	219	111	1674	1747	2186	1215	12	29	43	16	33	33	155	Sept. "
343	170	588	205	220	167	273	266	372	262	297	254	13	38	59	20	36	39	25	Dec. "
																			Week.
76	153	34	81	10	3	11	10	13	13	13	9	19	46	44	17	60	36	13	1
46	166	37	107	6	17	10	16	12	30	8	12	19	43	43	16	62	35	14	2
58	170	34	93	7	7	8	16	16	16	15	16	21	37	42	14	66	34	14	3
58	155	18	87	11	5	4	12	19	10	21	15	20	31	37	15	70	34	15	4
37	137	36	69	8	6	10	14	11	17	14	14	21	27	35	17	71	34	15	5
39	104	39	54	9	4	4	6	13	14	16	17	21	25	34	17	70	32	15	6
45	100	42	61	6	4	7	8	10	19	14	16	20	24	32	17	68	33	14	7
61	69	45	74	7	7	9	5	19	17	21	16	20	29	32	15	67	32	15	8
68	67	38	72	4	5	12	13	10	16	17	14	20	25	31	15	65	29	15	9
55	89	28	59	9	6	11	10	15	20	13	19	31	29	14	66	33	14	10	
48	91	46	55	13	9	5	14	15	14	18	10	18	35	27	16	67	33	13	11
48	92	73	49	8	3	7	9	9	12	20	12	18	35	26	14	69	31	14	12
61	80	61	73	8	4	7	12	11	13	9	7	18	38	29	14	73	33	13	13
61	65	53	64	12	10	6	7	11	13	14	7	20	39	26	15	68	30	13	14
46	66	49	54	8	5	8	9	16	17	15	14	20	39	27	16	69	31	13	15
54	66	60	48	13	6	7	9	15	24	14	9	22	41	28	14	67	31	14	16
72	59	49	77	10	5	9	14	14	14	8	8	21	43	27	15	64	30	13	17
74	59	43	59	14	8	13	8	17	18	21	11	22	43	29	14	62	30	14	18
69	66	37	53	15	7	7	9	12	9	29	14	20	43	28	15	61	28	13	19
53	45	44	46	9	10	5	9	7	13	25	15	22	44	28	15	58	30	14	20
70	45	36	50	8	6	9	15	18	16	30	11	22	44	30	15	53	29	17	21
64	54	35	43	10	8	8	13	14	25	28	10	20	46	30	15	53	29	20	22
56	31	31	36	7	4	8	11	12	39	96	5	19	44	30	15	45	30	26	23
44	39	47	34	21	9	8	10	19	39	96	5	19	44	30	15	45	30	26	24
55	26	52	20	6	5	16	12	25	51	183	13	20	43	32	16	44	28	39	25
41	29	56	25	11	7	18	10	38	59	219	15	18	42	32	15	43	29	55	26
51	24	49	28	6	7	13	3	44	108	219	35	16	41	34	15	41	29	50	27
43	27	56	29	7	9	16	7	94	171	264	15	38	35	15	42	30	144	28	28
33	26	50	43	6	8	9	8	159	192	272	140	14	37	36	15	41	32	195	29
43	23	54	35	14	5	15	6	253	158	190	122	13	36	38	16	39	31	232	30
38	16	64	26	9	7	24	6	247	125	162	126	12	35	39	16	35	29	223	31
52	14	39	35	4	11	15	11	195	128	135	164	11	31	40	16	34	31	207	32
44	13	49	30	7	7	30	6	167	148	153	124	11	30	41	15	31	32	194	33
43	13	49	22	11	9	20	11	127	158	190	114	11	27	43	16	30	33	175	34
40	9	42	26	10	4	14	8	88	165	172	71	11	24	44	16	30	34	153	35
44	9	42	15	6	10	15	14	83	153	129	79	10	21	48	15	29	34	133	36
54	12	50	20	13	20	11	10	66	109	118	62	10	19	49	17	28	36	109	37
55	12	45	25	17	17	23	8	84	65	95	49	10	18	50	19	27	38	88	38
24	6	45	15	17	16	14	13	67	62	87	35	8	18	58	20	25	38	74	39
40	11	32	7	17	15	10	13	65	40	52	33	10	21	61	20	25	38	57	40
34	5	24	13	22	12	21	20	49	32	40	30	10	23	62	20	24	39	47	41
33	2	35	10	22	13	19	17	44	33	44	26	9	27	63	21	26	40	38	42
28	7	23	18	17	18	19	14	31	20	27	19	10	23	65	19	26	41	30	43
36	10	28	14	19	10	18	17	36	30	23	20	10	33	65	18	29	41	26	44
67	10	37	10	15	9	17	25	21	13	7	16	12	36	62	21	29	39	21	45
60	15	44	8	13	16	21	21	21	14	22	23	13	39	62	20	34	41	20	46
69	12	45	11	20	13	26	23	15	11	15	15	12	42	61	21	36	40	17	47
76	8	48	26	17	11	25	18	25	11	11	25	14	46	60	20	38	40	16	48
56	17	59	23	17	11	34	17	14	17	11	14	15	47	55	22	43	41	16	49
71	22	67	25	19	15	21	24	15	17	23	11	16	47	55	21	46	40	15	50
93	20	74	26	10	10	24	25	11	11	15	15	16	51	48	19	51	37	14	51
180	31	67	14	12	14	18	32	25	13	7	7	16	50	46	19	56	35	14	52

* The weekly averages for scarlet fever and diphtheria relate to the 35 years 1860-94.

TABLE 24.—Births and Deaths Registered in London, and Meteorology at Greenwich, in each Week of 1894.

No. of Week.	Week ending	BIRTHS.			DEATHS.			Mean Temperature of the Air.	Mean of the		Degree of Humidity (complete saturation = 100).	Fall of Rain in Inches.	Amount of Horizontal Movement of the Air in each Week.	Sun above horizon in Hours.	Registered Sunshine in Hours.
		Total.	Males.	Femls.	Total.	Males.	Femls.		Highest Readings of the Thermometer.	Lowest Readings of the Thermometer.					
1	1894. Jan. 6	2488	1306	1180	2038	1001	1037	26.5	30.1	22.0	77	0.56	Miles. 2276	55.3	3.4
2	" 13	2867	1444	1423	2461	1236	1225	37.5	42.3	31.2	89	0.43	1734	56.7	7.0
3	" 20	2719	1343	1376	1975	997	978	45.0	48.5	40.7	88	0.86	2731	58.4	9.2
4	" 27	2689	1377	1312	1655	855	800	41.6	46.1	36.6	84	0.71	3366	60.7	10.0
5	Feb. 3	2708	1365	1343	1620	821	799	42.0	47.9	37.3	83	0.69	3274	63.3	18.5
6	" 10	2709	1408	1301	1532	781	751	46.0	51.3	40.4	86	0.27	3732	66.1	6.9
7	" 17	2602	1300	1302	1552	784	768	41.0	45.9	33.7	83	0.60	2820	69.2	8.1
8	" 24	2587	1337	1250	1663	858	805	34.3	41.0	27.3	78	0.21	1889	72.3	38.0
9	March 3	2564	1336	1228	1748	865	883	44.0	51.4	37.3	84	0.45	3131	75.5	15.6
10	" 10	2636	1358	1278	1700	876	824	44.2	51.7	37.6	81	0.19	3236	78.7	14.4
11	" 17	2538	1287	1271	1608	862	746	42.6	51.3	35.9	79	0.41	2906	81.9	25.4
12	" 24	2496	1289	1297	1689	849	840	43.1	52.4	35.8	86	0.00	1464	85.2	20.6
13	" 31	2437	1244	1193	1736	863	873	43.2	61.4	34.5	71	0.00	1240	88.4	60.5
14	April 7	2682	1324	1358	1587	836	751	50.6	63.1	40.5	76	0.01	1555	91.7	36.9
15	" 14	2600	1338	1262	1600	815	784	55.2	65.5	43.4	67	0.06	1444	94.9	37.7
16	" 21	2457	1240	1208	1509	787	722	48.7	58.0	43.1	81	0.28	1791	98.0	18.6
17	" 28	2485	1274	1211	1543	788	755	49.5	60.4	40.9	78	0.98	1667	100.9	27.7
18	May 5	2637	1288	1349	1428	756	672	43.8	57.9	40.7	78	0.18	2055	103.8	14.0
19	" 12	2589	1322	1267	1531	784	747	51.0	61.1	42.6	76	0.44	2414	106.6	23.8
20	" 19	2241	1121	1120	1463	759	704	54.5	65.8	45.5	74	0.09	1981	109.0	36.5
21	" 26	2414	1218	1196	1440	764	676	43.2	58.5	38.8	72	0.42	2569	111.4	39.9
22	June 2	2374	1245	1129	1366	706	660	50.1	61.2	42.0	80	0.67	2142	113.2	30.5
23	" 9	2300	1147	1153	1398	700	698	55.1	65.2	49.8	83	1.07	1953	114.6	8.9
24	" 16	2436	1182	1254	1336	690	646	56.3	66.4	43.8	79	0.46	1997	115.5	15.7
25	" 23	2334	1167	1167	1330	684	646	53.9	66.7	50.5	79	0.32	1781	116.2	29.0
26	" 30	2458	1226	1232	1282	609	673	63.8	76.8	51.0	67	0.00	1840	115.7	67.5
27	July 7	2254	1158	1096	1314	696	618	66.0	79.5	53.9	86	0.19	1570	114.9	53.6
28	" 14	2371	1207	1164	1356	715	641	59.2	70.6	52.0	80	0.27	2101	113.6	39.9
29	" 21	2423	1262	1161	1405	744	661	59.1	67.6	53.0	82	0.30	2328	112.0	16.6
30	" 28	2419	1249	1170	1437	726	711	62.8	73.8	54.4	80	0.39	1224	109.9	33.9
31	August 4	2695	1379	1316	1464	775	689	62.1	71.9	55.7	80	0.10	2025	107.4	18.6
32	" 11	2200	1078	1122	1450	747	703	60.4	70.2	55.3	79	0.52	1967	104.8	19.9
33	" 18	2665	1356	1309	1428	741	687	59.2	68.8	53.0	79	0.94	2608	101.9	30.7
34	" 25	2361	1197	1164	1284	633	651	57.4	64.4	52.0	87	1.50	1719	98.9	14.0
35	Sept. 1	2704	1428	1276	1198	622	576	60.8	72.1	52.2	86	0.00	825	96.0	28.6
36	" 8	2369	1203	1166	1175	629	546	52.7	61.7	44.8	80	0.54	1635	92.6	17.6
37	" 15	2569	1251	1318	1241	624	617	54.8	63.7	47.7	82	0.02	1767	89.6	17.2
38	" 22	2358	1224	1134	1211	647	564	55.9	62.5	51.0	90	0.11	1257	86.5	3.0
39	" 29	2403	1243	1160	1277	675	602	52.5	59.9	46.3	89	0.59	1572	83.1	14.7
40	Oct. 6	2532	1312	1220	1287	640	647	52.8	59.5	47.5	85	0.12	1842	80.0	13.9
41	" 13	2323	1184	1139	1291	692	599	53.0	58.6	48.5	93	0.36	697	76.9	1.7
42	" 20	2516	1303	1213	1326	693	633	44.3	50.9	38.4	85	0.19	1421	73.7	7.3
43	" 27	2413	1232	1181	1481	740	741	50.3	55.8	45.0	81	1.35	3046	70.7	9.3
44	Nov. 3	2669	1351	1328	1372	711	661	54.0	59.0	50.2	87	2.16	2352	67.6	11.8
45	" 10	2657	1267	1290	1249	648	601	50.3	56.5	44.3	83	0.64	2395	64.7	22.8
46	" 17	2494	1268	1226	1275	644	631	47.0	52.4	42.2	87	2.03	2828	62.1	20.4
47	" 24	2704	1379	1325	1286	655	671	44.0	51.1	36.7	89	0.13	1509	59.7	15.6
48	Dec. 1	2550	1280	1270	1347	700	647	40.3	44.0	35.5	87	0.00	1631	57.4	2.7
49	" 8	2599	1315	1284	1614	808	806	39.8	44.0	34.0	91	0.17	1150	55.9	4.4
50	" 15	2597	1247	1350	1550	780	770	45.4	48.8	41.1	88	0.97	2089	54.8	4.4
51	" 22	2703	1395	1308	1448	726	722	43.9	49.1	38.2	83	0.59	3400	54.0	3.0
52	" 29	1950	1061	889	1434	775	659	43.0	46.7	39.0	87	0.22	2389	54.3	1.7

TABLE 25.—Greenwich Meteorological Elements for the Year 1894. By J. GLAISHER, Esq., F.R.S.

1894. MONTHS.	Mean Reading of the Barometer.	TEMPERATURE OF THE AIR.								Mean Temperature of the Dew Point.	Mean Elastic Force of Vapour.	Weight of Vapour in a Cubic Foot of Air.	Mean additional Weight required for Saturation.	Mean Degree of Humi- dity. Saturation = 100.	Mean Weight of a Cubic Foot of Air.	RELATIVE PROPORTION OF WIND.				Mean Amount of Cloud.	RAIN.			
		Highest by Day.	Lowest by Night.	Range in Month.	Mean of all Highest.	Mean of all Lowest.	Mean Daily Range.	Mean for the Month.	N.							E.	S.	W.	Number of Days it fell.		Amount collected.			
January-	in.																							
February	29.702	52.2	12.8	39.4	42.6	33.3	9.3	38.2	+1.5	33.7	in. .193	2.3	grs. 0.1	553	4	6	12	9	6.9	21	3.09			
March	29.805	55.9	24.4	31.5	47.3	35.9	11.4	41.5	+2.7	33.7	in. .218	2.5	grs. 0.5	552	3	6	8	11	6.0	13	1.69			
April	29.792	75.8	34.8	41.5	61.3	41.9	19.9	61.0	+4.9	42.4	in. .284	3.1	grs. 1.2	539	6	10	10	4	5.9	13	1.44			
May	29.775	70.4	32.8	38.1	60.9	41.6	19.3	50.3	+2.3	42.4	in. .271	3.1	grs. 1.0	540	11	4	9	7	6.8	17	1.52			
June	29.840	81.1	41.3	39.8	69.2	49.8	19.4	58.6	+0.3	51.1	in. .375	4.2	grs. 1.3	532	7	3	9	11	6.5	14	2.04			
July	29.724	85.0	44.2	37.0	73.0	53.7	19.3	62.0	+0.3	54.5	in. .425	4.7	grs. 1.5	527	6	8	9	11	6.6	22	3.26			
August	29.730	81.5	44.2	38.3	69.0	53.4	15.6	59.6	-1.3	54.1	in. .419	4.7	grs. 1.6	530	5	4	7	15	7.2	17	3.93			
September	29.932	70.3	33.9	37.0	62.2	47.5	14.7	54.1	-2.5	43.3	in. .355	4.0	grs. 1.7	539	10	8	1	4	6.5	13	1.25			
October	29.743	63.0	30.5	31.5	56.1	45.2	10.9	50.2	+0.7	43.3	in. .315	3.3	grs. 1.5	510	10	8	7	6	7.8	18	1.89			
November	29.808	61.9	31.1	34.8	52.4	41.4	11.0	46.9	+1.4	42.9	in. .276	3.1	grs. 0.6	545	4	6	14	6	6.2	17	3.00			
December	29.849	52.9	28.2	24.7	46.4	37.3	9.1	42.2	+3.2	38.2	in. .231	2.7	grs. 0.4	551	6	4	9	12	6.6	25	1.95			
Means	29.794	68.4	32.7	35.7	57.9	43.1	14.8	49.9	+1.8	44.3	in. .299	3.4	grs. 0.8	541	84	74	103	104	6.5	192	26.88			
																Sums.				Sum		Sum		

TABLE 26.—METEOROLOGICAL TABLE FOR LONDON, 1894.

(Deduced from Observations, at Greenwich, under the Superintendence of the Astronomer Royal, and compiled from Quarterly Tables, furnished to the Registrar General by James Glaisher, Esq., F.R.S.)

Winter . . . Jan, Feb, March. Spring . . . April, May, June. Summer . . . July, Aug, Sept. Autumn . . . Oct, Nov, Dec.	Temperature of						Elastic Force of Vapour.		Weight of Vapour in a Cubic Foot of Air.		Degree of Humidity.		Reading of Barometer.		Weight of a Cubic Foot of Air.		Rain.		Reading of Thermometer on Grass.			
	Air.		Evaporation.		Dew Point.		Air—Daily Range.		Mean.		Diff. from Average of 53 Years.		Mean.		Diff. from Average of 53 Years.		Amount.		At or below 30°.		Between 30° and 40°.	
	Diff. from Average of 123 Years.		Diff. from Average of 53 Years.		Diff. from Average of 53 Years.		Diff. from Average of 53 Years.		Mean.		Diff. from Average of 53 Years.		Mean.		Diff. from Average of 53 Years.		Diff. from Average of 53 Years.		Sum.		Lowest Reading at Night.	
	Mean.	Diff. from Average of 123 Years.	Mean.	Diff. from Average of 53 Years.	Mean.	Diff. from Average of 53 Years.	Mean.	Diff. from Average of 53 Years.	Mean.	Diff. from Average of 53 Years.	Mean.	Diff. from Average of 53 Years.	Mean.	Diff. from Average of 53 Years.	Mean.	Diff. from Average of 53 Years.	Sum.	ins.	grs.	ins.	Sum.	Lowest Reading at Night.
1894.	49.9	+1.3	47.1	+0.7	44.3	+0.8	14.8	-1.0	3.4	0.0	81	-1	29.794	+0.20	541	-1	26.88	+1.84	153	155	12.8	56.2
YEAR																						
Winter Quarter	41.4	+2.5	39.0	+1.7	36.2	+1.0	12.9	+1.1	2.5	+0.1	83	-1	29.795	+0.23	551	-1	5.40	+0.46	37	46	12.8	45.9
Spring do.	53.3	+1.0	49.5	+0.4	45.7	+0.4	19.5	-0.5	3.5	0.0	74	-3	29.769	-0.13	537	-1	5.00	-0.72	7	46	25.8	50.9
Summer do.	58.6	-1.2	55.5	-0.8	52.7	-0.3	16.5	-3.2	4.5	-0.1	81	+3	29.812	+0.19	532	+2	7.54	+0.25	1	15	27.1	56.2
Autumn do.	46.4	+2.8	44.6	+2.2	42.5	+2.0	10.3	-1.5	3.1	0.0	87	-3	29.800	+0.50	545	-2	8.94	+1.85	7	51	26.0	54.0

In this Table + and - respectively signify that the number in the preceding column is above or below the average to which these signs are affixed.

TABLE 27.—Number of Services, and Average Daily Quantity of Water DELIVERED by the London Water Companies in each MONTH of the Year 1894.

COMPANIES.		NUMBER OF SERVICES IN											
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Total Services		801,196	801,971	803,215	804,363	805,200	806,327	807,250	808,234	809,885	810,438	811,265	811,588
FROM THAMES		386,895	387,288	388,007	388,486	388,904	389,724	390,066	390,459	391,309	391,820	392,221	392,536
FROM LEA AND FROM OTHER SOURCES		414,301	414,783	415,208	415,877	416,296	416,603	417,184	417,775	418,576	418,618	419,044	419,052
FROM THAMES.													
CHELSEA		36,776	36,782	36,791	36,821	36,792	36,811	36,824	36,828	36,864	36,915	36,967	36,967
WEST MIDDLESEX		77,197	77,197	77,227	77,277	77,713	78,003	78,008	78,008	78,295	78,387	78,586	78,586
SOUTHWARK AND VAUXHALL		116,163	116,277	116,877	116,466	116,583	116,729	116,834	116,942	117,072	117,182	117,280	117,317
GRAND JUNCTION		53,773	53,809	53,865	53,922	53,958	53,939	53,902	53,881	53,908	53,936	53,986	53,943
LAMBETH		97,996	98,173	98,447	98,627	98,868	99,142	99,398	99,600	99,770	100,002	100,183	100,313
FROM LEA AND FROM OTHER SOURCES.													
NEW RIVER		157,413	157,421	157,500	157,694	157,695	157,909	158,011	158,081	158,134	158,173	158,171	158,189
EAST LONDON		176,644	176,936	177,274	177,636	177,969	177,969	178,359	178,748	179,196	179,424	179,681	179,681
KENT		80,244	80,376	80,434	80,557	80,632	80,725	80,834	80,946	80,946	81,022	81,192	81,192
COMPANIES.		AVERAGE DAILY SUPPLY OF WATER IN GALLONS DURING THE MONTHS OF											
		January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
Total Quantities supplied		202,442,984	187,920,100	185,483,942	195,423,634	196,123,630	203,786,540	216,653,007	201,932,606	194,121,301	192,939,209	189,709,339	184,352,703
FROM THAMES		101,347,786	95,788,117	94,569,624	99,850,387	100,426,906	103,642,650	110,989,911	108,455,750	100,779,460	101,066,742	97,483,540	93,798,479
FROM LEA AND FROM OTHER SOURCES		101,095,198	92,131,983	90,894,318	95,573,247	95,696,724	100,143,890	105,670,096	98,476,856	93,341,841	91,872,467	92,270,899	90,554,224
FROM THAMES.													
CHELSEA		11,550,864	11,035,306	10,730,688	11,701,246	11,724,025	12,355,675	13,405,757	12,190,138	11,801,003	11,659,995	11,935,651	10,940,709
WEST MIDDLESEX		18,869,914	18,140,459	17,739,251	19,237,947	19,394,131	19,851,139	21,402,653	19,268,884	18,958,820	18,911,633	18,565,950	18,365,953
SOUTHWARK AND VAUXHALL		31,885,631	30,638,003	30,176,875	30,572,786	31,221,488	32,318,740	33,947,345	33,091,195	32,066,994	33,093,294	31,346,514	29,107,683
GRAND JUNCTION		17,972,267	16,700,685	17,157,926	18,011,937	18,369,595	18,748,423	19,558,924	18,490,723	17,971,406	17,527,174	16,982,001	16,310,172
LAMBETH		21,069,110	19,223,664	18,764,634	20,326,471	19,727,667	20,388,678	22,671,933	20,449,910	20,011,279	19,940,346	19,257,894	19,174,860
FROM LEA AND FROM OTHER SOURCES.													
NEW RIVER		87,340,000	82,886,000	82,808,000	85,190,000	85,730,000	87,671,000	89,800,000	87,975,000	86,964,000	86,565,000	82,808,000	81,788,000
EAST LONDON		47,306,627	44,093,715	42,992,733	44,660,395	44,089,522	46,251,772	49,147,081	44,500,027	41,942,842	40,465,664	44,877,023	44,669,917
KENT		16,449,371	15,025,298	15,123,585	15,722,952	15,817,202	16,321,118	16,722,435	16,001,829	15,334,999	14,839,803	14,585,973	14,098,807

Note.—The quantities of water in the above Table include the supply for various purposes other than for domestic consumption.

TABLE 28.—Average Number of Services, and Average Daily Quantity of Water DELIVERED for ALL PURPOSES and for DOMESTIC PURPOSES, by the London Water Companies during 1894.

WATER COMPANIES.	AVERAGE NUMBER of SERVICES during the Year.	AVERAGE DAILY SUPPLY OF WATER DURING THE YEAR.				
		Delivered.		Used for Domestic purposes.†		
		Gallons.	Cubic Metres.*	Gallons.	Gallons per Service.	
					1893.	1894.
Total	806,719	195,905,750	890,090	160,642,715	202	199
FROM THAMES	389,805	100,262,263	455,538	82,215,056	213	211
FROM LEA AND FROM OTHER SOURCES	416,914	95,643,487	434,552	78,427,659	193	188
FROM THAMES.						
CHELSEA	36,845	11,702,551	53,170	9,596,092	249	260
WEST MIDDLESEX	77,904	19,061,695	86,606	15,680,590	200	201
SOUTHWARK AND VAUXHALL	116,769	31,616,811	143,650	25,925,785	216	222
GRAND JUNCTION	59,094	17,802,428	80,885	14,597,391	254	247
LAMBETH	99,193	20,078,778	91,227	16,464,598	180	166
FROM LEA AND FROM OTHER SOURCES.						
NEW RIVER	157,866	35,640,333	161,930	29,225,073	195	185
EAST LONDON	178,290	44,505,650	202,210	36,494,633	205	205
KENT	80,758	15,497,504	70,412	12,707,953	160	157
Columns	1.	2.	3.	4.	5.	6.

* A cubic metre is equal in volume to 35·3 cubic feet, or to 220·09668 imperial gallons. It is nearly equivalent to the old English *tin* of four hogsheads, holding 85·243 cubic feet. It is in general use on the Continent; and its volume of water weighs a metric *ton*, differing inconsiderably in weight from the *ton* in common use. It is equal to 100 decalitre: thus a decalitre equals 2·2009668 gallons.

† According to returns of the London Water Companies made to the Select Committee on East London Water Bills (Session 1867), it is estimated that during the year 1866 about 82 per cent. of the total supply of water for all purposes was for domestic use; this proportion has been applied in estimating the quantities in columns 4, 5, and 6, showing the gallons probably used for domestic purposes. The average daily quantity of water supplied by the London Companies during the year 1894 was 195,905,750 gallons (890,090 cubic metres, equal to about as many *tuns* by measure, *tons* by weight), of which about 160,642,715 gallons (729,873 cubic metres) were probably used for domestic purposes. The average quantity used daily for domestic purposes to each service (see Col. 6) is equal to 90·4 decalitre, and, assuming 7·0 persons to each service, corresponds to 28·4 gallons (12·9 decalitre) to each person. The Returns of the Water Companies include services to uninhabited houses.

REPORT on the CHEMICAL, PHYSICAL, and BACTERIOSCOPIC EXAMINATION of
the WATERS supplied by the METROPOLITAN WATER COMPANIES during the
YEAR 1894. By Professor E. FRANKLAND, D.C.L., LL.D., M.D., F.R.S.

Water-analysis Laboratory, The Yews, Reigate,

31st January 1895.

SIR,

IN conformity with my usual practice, I have now to report to you the results of the chemical analysis, and the physical and bacterioscopic examination, of the water supplied by the eight Metropolitan Water Companies, the Colne Valley Water Company, and the Tottenham Local Board of Health, during the year 1894.

At the request of the Associated Metropolitan Water Companies I have continued to extend these examinations to (a) the chemical, physical, and bacterioscopic condition of the raw river water at the intakes of the various Companies, and (b) to the bacteriology of the water as it issues from the filter beds of each Company, and before it is pumped into the distributing mains.

CHEMICAL AND PHYSICAL EXAMINATION.

A comparison of Diagram No. 1 in my report of last year with the corresponding diagram here given shows that the raw material utilised by the Companies drawing their supplies from rivers was during the year 1894 much less favourable for the operations of these Companies than was the case in the previous year.

The only chemical impurity of consequence in these waters is organic matter, the two chief elements of which are carbon and nitrogen. Diagram No. 1 shows the fluctuations of organic matter in the raw river waters taken in by the various Companies drawing their supplies from the rivers Thames and Lea during each month of the year. In this diagram, the proportion of organic matter in a given volume of the Kent Company's water, during the nine years ending December 1876, is taken as unity; the proportions in the same volumes of the river waters are expressed by the ordinates, and the months in which these proportions were found by the abscissæ.

This diagram demonstrates the chemical superiority of the Lea over the Thames as a raw material. It also shows the greater purity of the Lea in its upper, as compared with its lower, reaches. The comparison of the water of the New River cut with that of the river Lea at Angel Road, where the East London Company's intake is situated, must not, however, be interpreted too strictly, inasmuch as the New River cut receives spring water from the Chadwell spring, and also, during the dry seasons, a large volume of deep-well water which is pumped into it. As in 1893, so in the past year, the curve of the New River cut never overtops that of the Lea at Angel Road; and, except in February, it is generally very much below it. On the other hand, the water of the Lea at Angel Road was in January, and again in March, inferior to the raw Thames water at Hampton. But this is a rare occurrence; and, generally, the raw water of the Lea at Angel Road is, as the diagram shows, considerably better than that of the Thames at Hampton; this being especially the case in times of flood. Thus in June, and again especially in November, when the Thames was organically very impure, the Lea at Angel Road exhibited at these times a comparatively small amount of organic impurity.

The next diagram (No. 2), constructed on the same scale as the last, compares the organic impurity of the raw Thames water at Hampton with that of the average filtered water delivered in London by the five Companies drawing from this river. The diagram shows how great was the chemical improvement effected by these Companies even during the severe floods of June and November, although it also shows, as was the case in 1893, how much the impounded flood water affected the quality of the supply in February and December, making it, in those months, of slightly worse quality, from a chemical point of view, than the raw river water passing three of the Companies' works at the time my samples of filtered water were drawn. As a consequence of this condition of things, some of the Companies who

DIAGRAM N^o 1.

PROPORTIONAL AMOUNT OF ORGANIC ELEMENTS IN RAW RIVER WATER

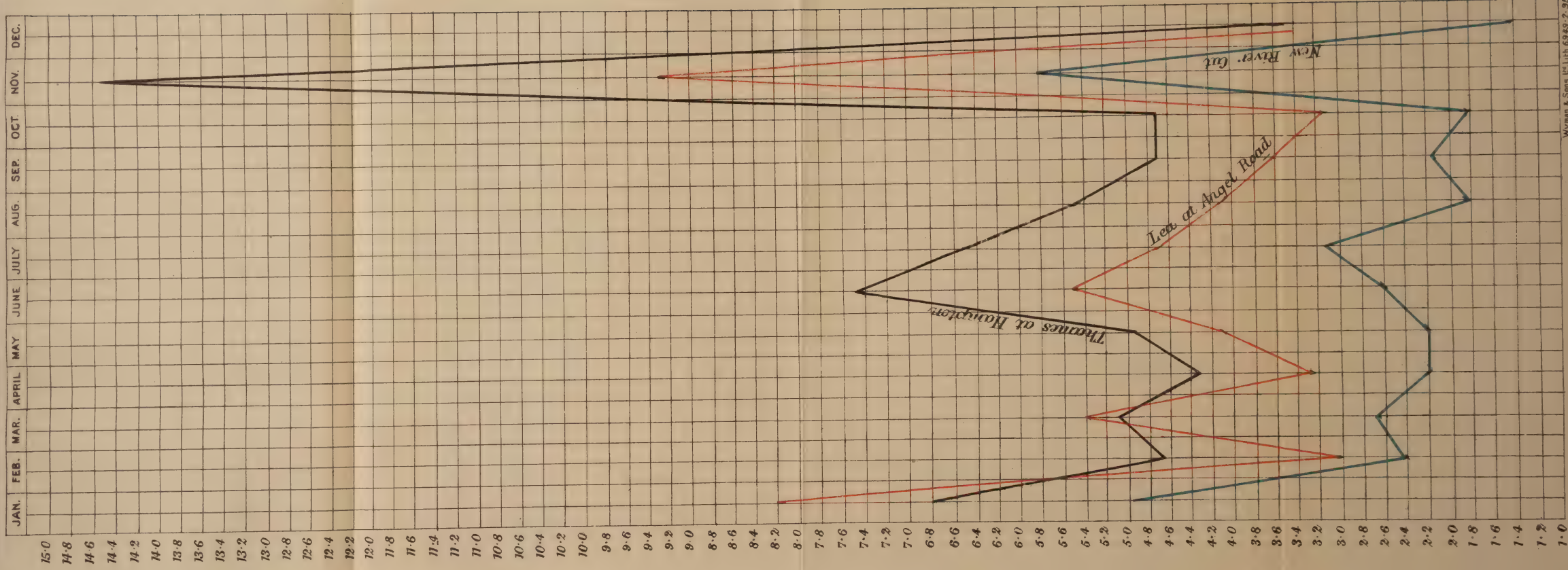


DIAGRAM N^o 2.

PROPORTIONAL AMOUNT OF ORGANIC ELEMENTS IN THAMES WATER.

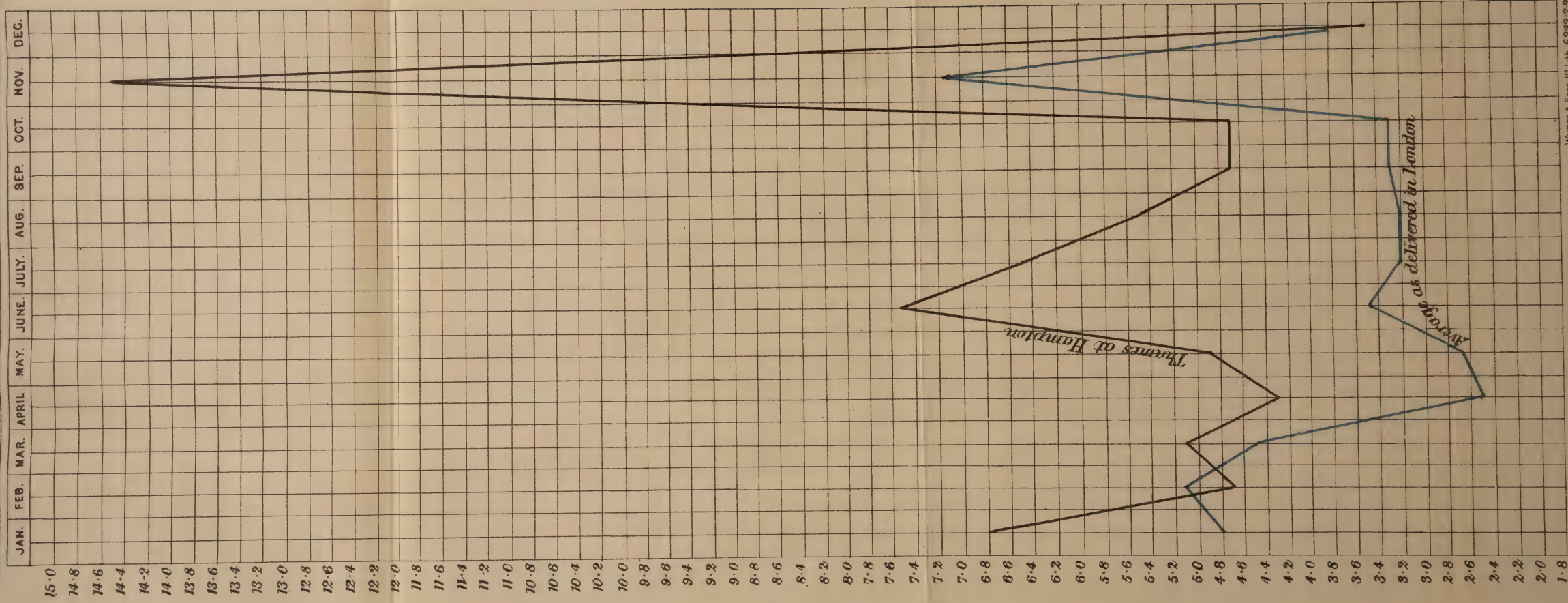


DIAGRAM Nº 4.

PROPORTIONAL AMOUNT OF ORGANIC ELEMENTS IN NEW RIVER AND DEEP WELL WATERS.

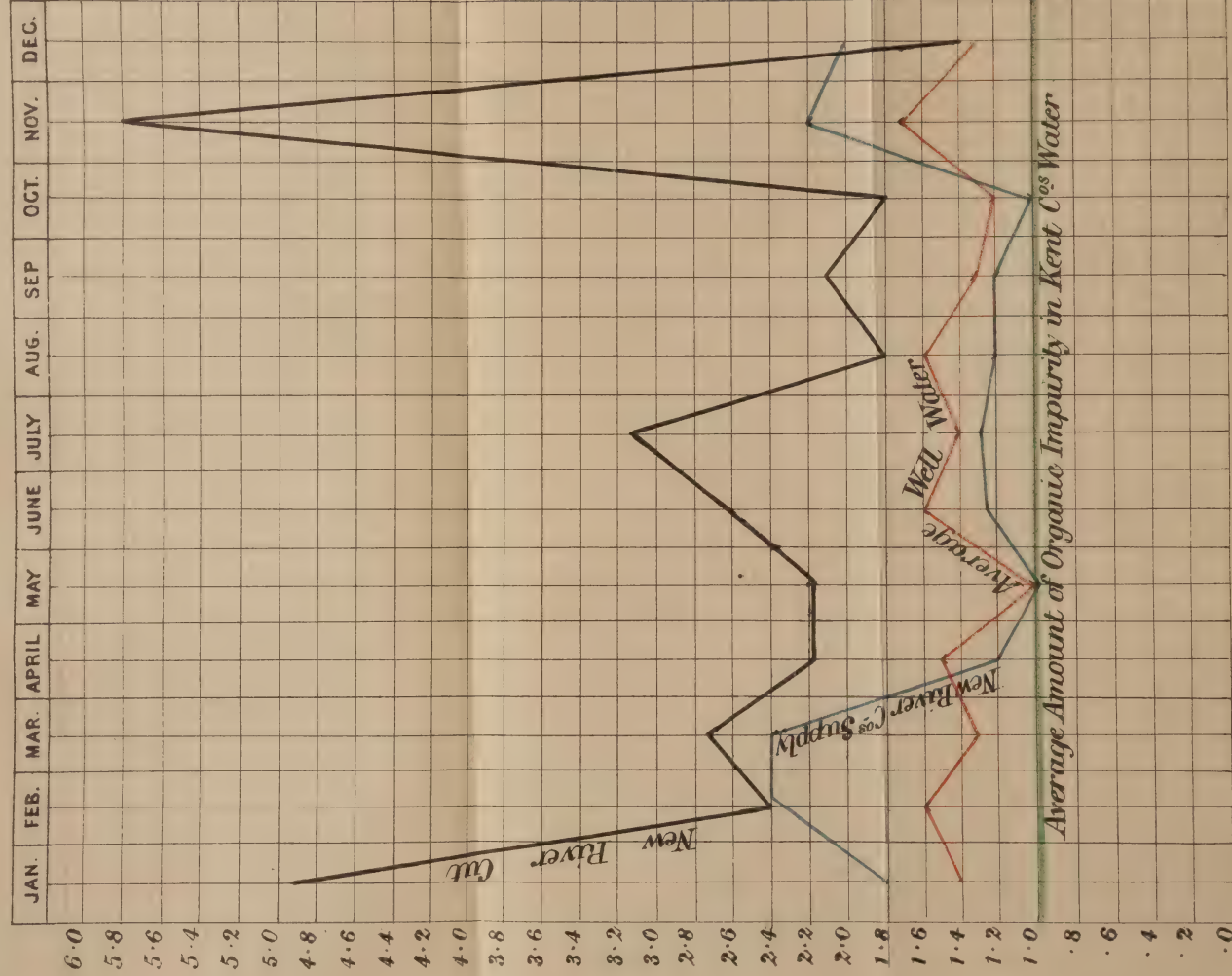
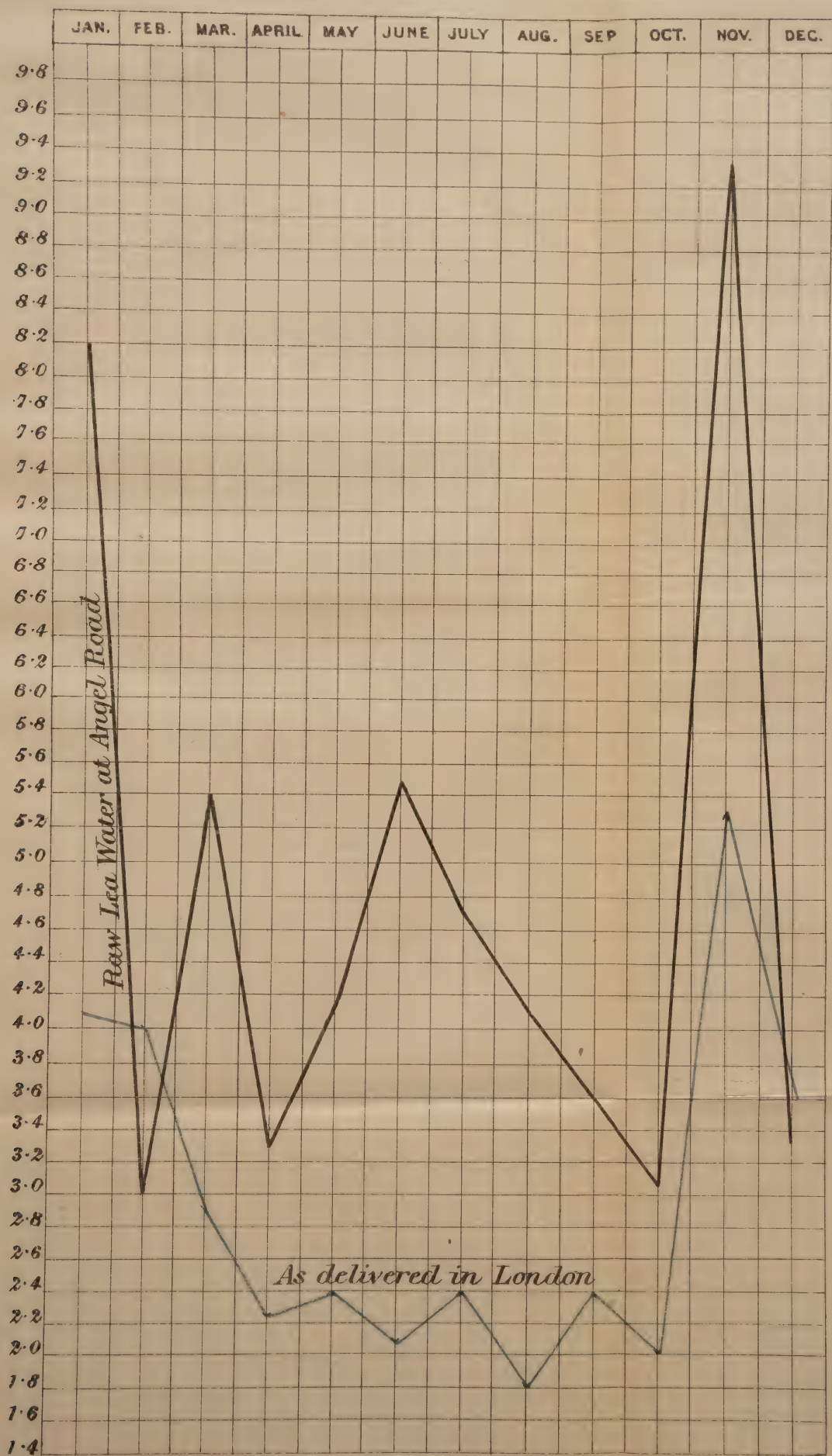


DIAGRAM N^o 3.

PROPORTIONAL AMOUNT OF ORGANIC ELEMENTS IN RAW LEA & EAST LONDON C^{os} WATER.



possessed only a comparatively small amount of storage capacity were actually enabled to deliver water in June and December of better quality than that supplied by the Chelsea Company, who notwithstanding their much greater capacity for storage, had obviously been unable to entirely exclude flood water, and had of course been compelled to utilise it afterwards; but this disadvantage of large though insufficient storage capacity was more than compensated by the very much higher organic purity of the Chelsea Company's water in November. Although the Company could not successfully cope with the exceptionally heavy flood of November, the diagram and the Table (E.) from which it was compiled show that they practically excluded the, for summer, unusually severe flood of June.

The next diagram (No. 3) compares the raw Lea water at Angel Road with the filtered supply of the East London Company as delivered in London, the scale being the same as before.

The East London Company possesses more storage capacity than that of any other Metropolitan Water Company; but, the diagram shows that even 15 days storage was not sufficient to entirely circumvent the floods of January and November, although it effectually excluded that of June. In February and June the stored but unfiltered water was inferior in chemical quality to that of the Lea passing the intake, and the flood of November seriously affected the quality of this Company's supply in that month. During the other months of the year, this Company's water was, as the diagram shows, of excellent chemical quality.

The next diagram (No. 4) contrasts the organic elements contained in the unfiltered water of the New River cut with the amount present in the supply of the New River Company; and, in order to compare the water delivered by this Company with the deep-well waters of the Kent, Colne Valley, Tottenham, and East London Companies, I have introduced into this diagram a third curve showing the average amount of organic impurity in these last-named waters. I have also marked the average amount of organic impurity in the Kent Company's water during the nine years ending December 1876, this being the standard of purity used in these diagrams and in all my reports.

This diagram demonstrates that, during the whole of the year 1894, the New River Company's supply was free from flood water, and was uniformly excellent in quality; in most months indeed even better than the average of the deep well waters.

All the samples for chemical and physical examination were taken directly from the mains of the several Companies at places recommended by their respective engineers. In addition to the chemical analysis to which each sample has been submitted, the temperature of the water, as it issues from the main at the time of the collection of the sample, has been determined, and the appearance which the water exhibited on being viewed in a two-foot tube, has been recorded. The results of the chemical analyses and observations of temperature are contained in the accompanying Tables A. to L.

Table A. gives the temperatures of the waters at the time of the collection of the samples. From this table it will be seen that, although the average temperature of the different waters for the year is remarkably uniform, the monthly variation, in the case of the river waters, is very great; whilst the temperature of the deep-well waters is practically uniform throughout the year. Thus the water, principally derived from the Thames and supplied by the Chelsea, West Middlesex, Southwark, Grand Junction, and Lambeth Companies, varied in temperature from $4^{\circ}7$ C. ($40^{\circ}5$ Fahr.) in January to $19^{\circ}7$ C. ($67^{\circ}5$ Fahr.) in August, and the water of the Lea, distributed by the New River and East London Companies, fluctuated from $6^{\circ}5$ C. ($43^{\circ}7$ Fahr.) in February to $19^{\circ}2$ C. ($66^{\circ}6$ Fahr.) in August. The deep-well water of the Kent Company, on the other hand, was free from these violent fluctuations, and practically maintained a constant temperature throughout the year; it varied only from $10^{\circ}3$ C. ($50^{\circ}5$ Fahr.) in February to $13^{\circ}8$ C. ($56^{\circ}8$ Fahr.) in August. This uniformity in temperature of deep-well water causes it to be cool and refreshing in summer and less likely to become frozen in the service-pipes in winter; whilst river water at $19^{\circ}7$ C. ($67^{\circ}5$ Fahr.) is unpleasantly rapid, and at $4^{\circ}7$ C. ($40^{\circ}5$ Fahr.), is not far removed from the freezing point.

Table B. gives the total amount of solid matters found in 100,000 parts by weight of each water. These solid matters are almost wholly composed of mineral substances, which, in these proportions, in no way diminish the fitness of the water for dietetic purposes. But the salts of lime and magnesia, constituting the principal part of these mineral ingredients, are objectionable; not only because they impart to the water what is known as "hardness," and thus render it unsuitable for washing, but also because they produce incrustations and deposits in steam and kitchen boilers and hot-water pipes. The comparatively slight proportion of organic material which the solid matter invariably contains, is, on the other hand, of more importance; because, if present in too large quantity, it interferes with the palatability of the water and imparts to it a more or less brownish-yellow tint. It was only during the exceptionally high flood of November that objectionably tinted water was delivered in London, and only by three out of the seven Companies deriving their supplies from rivers. In nature, even the purest waters contain, almost invariably, minute quantities of organic matter; but in river water the presence of even a small proportion is considered objectionable, partly on sentimental, and partly on hygienic, grounds, by reason of the possible origin of some portions of this organic matter.

The water both of the Thames and the Lea receives, above the points where it is abstracted for the purpose of the metropolitan supply, various contributions of organic matter of animal origin, such as the drainage from manured land, the effluents of sewage works, and even raw sewage itself. This animal matter may also, at any time, be accompanied by zymotic matters dangerous to health. But, although the sentimental objection to the presence of animal matter cannot be removed, it is gratifying to find, as the result of recent researches, that the zymotic matters of a pathogenic kind are rapidly destroyed in running water, so that the most minute microscopic inspection of the water as it reaches the intakes of the various Companies has hitherto failed to discover in it a single pathogenic germ. Further, it is now an established fact, that efficient sand filtration would prevent the passage of such germs into the filtered water, even should they arrive in a living condition at the intakes of the Companies. Thus the hygienic objection to the use of filtered water taken from the Thames and Lea is removed. This result of recent observations, carefully and laboriously conducted in this country, in Germany, and especially in the United States of America, is confirmed by the absence in London since the year 1866 of zymotic diseases traceable to the water supply. To secure this desirable result, however, *efficient* filtration is essential; and there can be no doubt that the immense loss of life during the cholera epidemics of 1849, 1854, and 1866 was due to the want of attention to filtration.

The saline matters dissolved in the deep-well water from the chalk are considerably greater in amount than those found in the Thames and Lea; and inasmuch as this chalk water is sent out in its natural condition by the Kent and East London Companies and by the Tottenham Local Board of Health, these supplies contained more solid matter than any of the other Metropolitan waters. The Colne Valley Company, on the other hand, by treating this chalk water with lime before delivery so reduced the solid matters that the latter were on the average about one-third less than the amount present in the river waters, and under one-half of that in the deep-well water, either of the Kent Company or of the Tottenham Local Board of Health.

Tables C. and D. are very important; they record the amounts of organic carbon and organic nitrogen in each of the waters, as determined by combustion with oxide of copper. Since these are the only two ingredients of the organic matter which can be accurately determined, these results are the only available evidence of the relative proportions of organic matter present in the waters. The tables show that, whilst both the Thames and Lea were frequently much polluted with organic matter, the water actually delivered by the Chelsea and New River Companies was never found to contain an excessive quantity; and in the case of the remaining Companies drawing from these rivers it was only excessive in the month of November during the exceptionally high flood which prevailed at that time.

The relation between the amounts of organic carbon and organic nitrogen recorded in these tables affords data from which an opinion may be formed as to

the origin of the organic matter, whether animal or vegetable. If the relative proportion of nitrogen to carbon be high, the inference is that the organic matter is chiefly animal; on the other hand, if it be low, it is certain that the organic matter is chiefly, if not entirely, of vegetable origin. Examined from this point of view, these tables indicate that the organic matter present in the river waters as delivered in London was to a very large extent of vegetable origin. In reference to this subject the attention of the Local Government Board was recently called, by the London County Council, to the discrepancy between my results, as given in these tables in my former reports, and those furnished by the chemists who make analyses for the Metropolitan Water Companies, the results obtained by the Companies' chemists indicating that the organic matter present in the waters was chiefly of animal origin, whilst, as just mentioned, my analytical results assigned to it chiefly a vegetable origin. At a consultation with these chemists in the month of June last, it was discovered that, owing to an error in the method of analysis pursued by the Companies' chemists, they had obtained results which showed too large a proportion of nitrogen to carbon in the organic matters. There had also been for a long time a considerable discrepancy between our analytical results in the case of the Chelsea Company's water, the cause of which was discovered at the same time. The assistant who collected the samples for the Companies' chemists had, during two years, inadvertently taken samples of the New River Company's water believing them to be drawn from the Chelsea Company's main. Consequently the results reported as having been obtained by them with the Chelsea Company's water had, in fact, been got in the analyses of water drawn from the New River Company's mains. These errors were at once remedied, and since that time our analytical results have been in close accordance.

The water derived chiefly from the Lea by the New River and East London Companies was almost invariably superior to the Thames-derived water of the Chelsea, West Middlesex, Southwark, Grand Junction, and Lambeth Companies; the New River Company's water generally rivalling the deep-well waters in respect of organic purity. The proportion of organic matter in the deep-well waters of the Kent, Colne Valley, and East London Companies, and in that of the Tottenham Local Board of Health, was almost invariably very small.

Taking the mean proportion of organic impurity contained in the Thames water delivered in 1868 as 1,000, I find that in subsequent years, 1894 included, the following proportions were present:—

Year.	Proportion of Organic Impurity present in Thames Water as delivered in London.	Year.	Proportion of Organic Impurity present in Thames Water as delivered in London.
1868	1,000	1882	1,033
1869	1,016	1883	850
1870	795	1884	723
1871	928	1885	839
1872	1,243	1886	756
1873	917	1887	690
1874	933	1888	722
1875	1,030	1889	677
1876	903	1890	680
1877	907	1891	1,002
1878	1,056	1892	831
1879	1,165	1893	762
1880	1,254	1894	955
1881	993		

These figures show that the Thames water distributed during the year 1894 was of worse average quality than that sent out during the two previous years, for which the floods of January and November are mainly responsible.

Of the water chiefly derived from the river Lea, that supplied by the New River Company contained, in every case, as usual, less organic matter than that present in the water of the East London Company, which was in this respect, on the average, superior to the best of the Thames waters. Taking, as before, the mean proportion of organic impurity contained in the Thames water delivered in 1868 as 1,000, I find that in subsequent years, 1894 included, the following proportions were present in the Lea water:—

Year.	Proportion of Organic Impurity present in Lea Water as delivered in London.	Year.	Proportion of Organic Impurity present in Lea Water as delivered in London.
1868	484	1882	711
1869	618	1883	620
1870	550	1884	500
1871	604	1885	603
1872	819	1886	500
1873	693	1887	473
1874	583	1888	506
1875	751	1889	504
1876	562	1890	432
1877	596	1891	684
1878	747	1892	610
1879	947	1893	502
1880	1,013	1894	554
1881	765		

Thus the Lea water delivered during the year 1894 was of fairly good average quality, but not quite equal to that delivered in the previous year.

The organic matter found in the deep-well water supplied to London during the past twenty-seven years is, of course, much smaller in amount, and the fluctuations from year to year are, as might be expected, less violent than in the river water. Referred to the same standard, the figures are as follow:—

Year.	Proportion of Organic Impurity present in Deep-well Water as delivered in London.	Year.	Proportion of Organic Impurity present in Deep-well Water as delivered in London.
1868	254	1882	409
1869	312	1883	321
1870	246	1884	264
1871	150	1885	200
1872	221	1886	244
1873	250	1887	249
1874	287	1888	241
1875	250	1889	268
1876	246	1890	252
1877	243	1891	357
1878	323	1892	338
1879	387	1893	327
1880	393	1894	348
1881	405		

Table E. shows the proportional amount of organic elements (organic carbon and organic nitrogen) in each of the waters, the average amount of these elements contained in the Kent Company's water during the nine years ending December 1876 being taken as unity.

This Table shows that the maximum, minimum, and average proportions of organic matter, as measured by this standard, present in the several waters during the year 1894, were :—

Sources.		Maximum.	Minimum.	Average.
Deep wells	Kent - -	0·8	0·5	0·7
	Tottenham - -	1·7	1·1	1·4
	East London - -	2·1	0·8	1·6
	Colne Valley - -	2·7	1·6	2·1
River Lea	New River - -	2·4	1·0	1·6
	East London - -	5·3	1·8	2·9
River Thames	Chelsea - -	5·0	1·8	3·6
	Grand Junction - -	6·3	2·7	3·8
	West Middlesex - -	7·7	2·4	3·9
	Southwark - -	8·8	2·0	4·1
	Lambeth - -	9·3	2·5	4·2

Thus, of the deep-well waters, that supplied by the Kent Company contained by far the smallest proportion of organic matter. Of the river water, that sent out by the New River Company stood much higher than the others in this respect, it equalled the East London Company's deep-well water and markedly surpassed that of the Colne Valley Company. Lastly, the East London Company's water derived from the Lea was, on the average, superior to any of the Thames-derived waters. The supply of the Chelsea Company was the best of the Thames-derived waters, both as regards maximum, minimum, and average quality.

The following Table exhibits the maximum amount of organic matter in the waters supplied from the Thames and Lea during the years 1868 to 1894 inclusive, the average of the samples from each source in the month of greatest impurity being taken for comparison :—

MAXIMUM AMOUNT OF ORGANIC MATTER.

THAMES.			LEA.		
Year.	Elements of organic matter in parts per 100,000.	Months in which maximum pollution occurred.	Year.	Elements of organic matter in parts per 100,000.	Months in which maximum pollution occurred.
1868	·45	January.	1868	·27	February.
1869	·60	February.	1869	·33	February.
1870	·42	January.	1870	·30	January.
1871	·52	October.	1871	·22	February.
1872	·48	January & December.	1872	·39	December.
1873	·46	January.	1873	·33	January.
1874	·37	March.	1874	·21	March.
1875	·49	November.	1875	·28	November.

THAMES.			LEA.		
Year.	Elements of organic matter in parts per 100,000.	Months in which maximum pollution occurred.	Year.	Elements of organic matter in parts per 100,000.	Months in which maximum pollution occurred.
1876	·44	December.	1876	·24	March.
1877	·40	January.	1877	·30	January.
1878	·36	December.	1878	·26	June.
1879	·38	February.	1879	·33	July.
1880	·42	October.	1880	·33	February.
1881	·34	February.	1881	·34	February.
1882	·37	November.	1882	·26	December.
1883	·32	January.	1883	·24	December.
1884	·27	February.	1884	·20	March.
1885	·35	November.	1885	·28	December.
1886	·30	December.	1886	·21	February.
1887	·34	January.	1887	·31	January.
1888	·30	December.	1888	·25	December.
1889	·29	January.	1889	·16	March.
1890	·27	January.	1890	·19	January.
1891	·43	October.	1891	·27	November.
1892	·35	December.	1892	·27	December.
1893	·37	February.	1893	·23	March.
1894	·42	November.	1894	·22	November.

It is thus evident that the comparatively large amount of organic contamination in the Thames-derived water noted in 1891 has been very nearly equalled during the flood of November last, whilst the maximum impurity in the Lea was much smaller than that noted in 1891 and was even slightly less than in 1893.

The variations in the proportions of organic matter in the several supplies are exhibited graphically in the accompanying diagrams (A.* & B.*), in which the maximum and minimum proportions of organic matter present each year on the average, in each of the three classes of waters since 1868 are registered.

Tables F. and G., which record the proportions of ammonia and of nitrates and nitrites in the various waters, require no explanation.

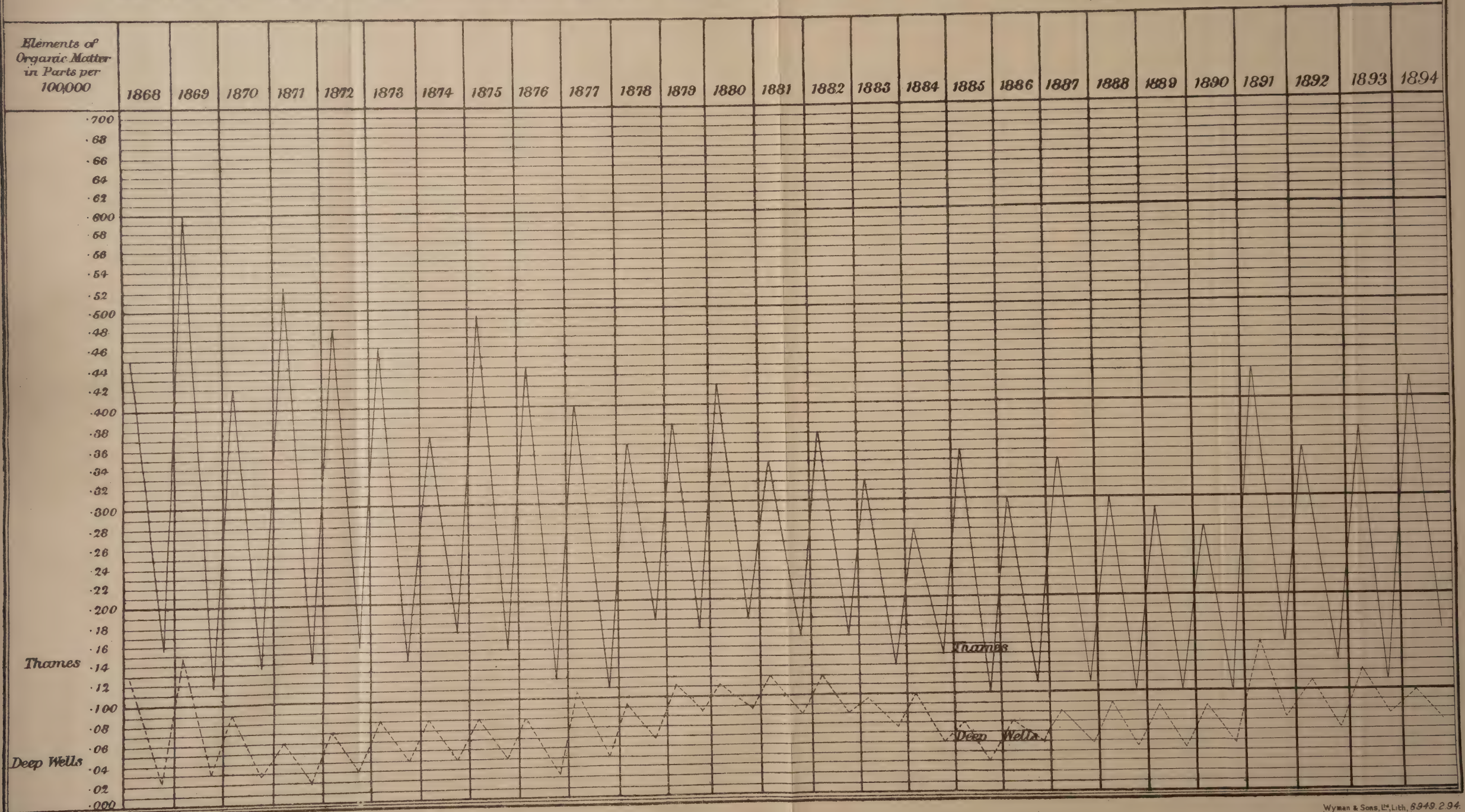
In Table H. is given the amount of combined nitrogen, both mineral and organic, found in each of the waters. The total amount is of importance, inasmuch as, after making a small correction for the combined nitrogen present in average rain-water, it sums up the evidence of the nitrogenous organic matters which have gained access to the water in the past, as well as of those which were still present at the time the analysis was made. In river and surface water generally, this total combined nitrogen undergoes a very appreciable reduction during the warmer months of the year, in consequence of the vegetable life which then abounds in such water. On this account, therefore, the total amount of combined nitrogen found in the river waters in winter can alone be regarded as bearing any relationship to the amount of nitrogenous matters which the waters have received.

The deep-well waters, on the other hand, are not subject to the influence of vegetable life, and the amount of total combined nitrogen is, therefore, equally indicative at all times of the year.

Hence, in the following Table, the average proportion of total combined nitrogen in the case of the Thames and Lea is given for the months of January, February,

MAXIMUM AND MINIMUM PROPORTION OF ORGANIC MATTER IN WATER FROM THAMES AND DEEP WELLS.

(A)



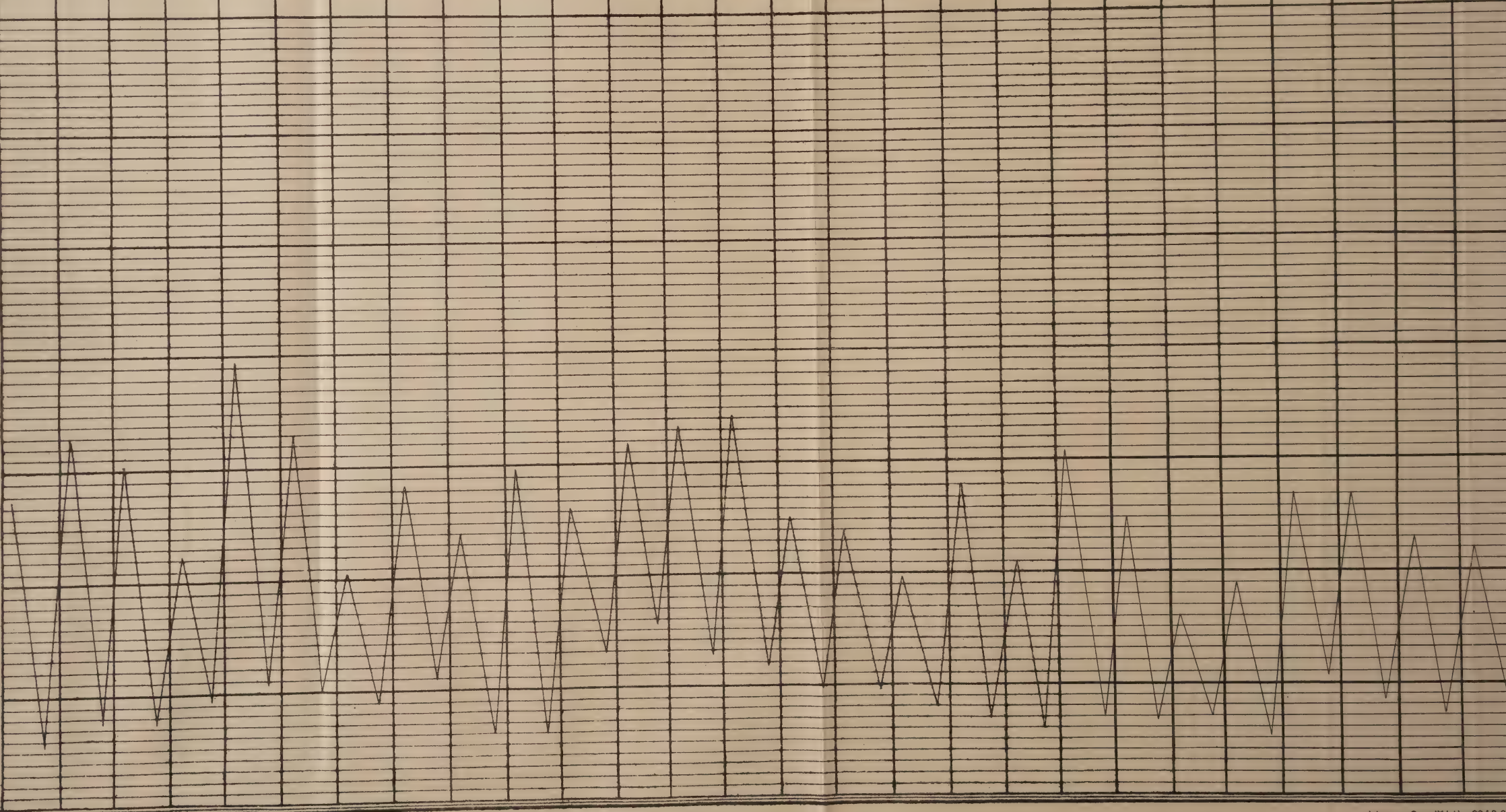
MAXIMUM & MINIMUM PROPORTION OF ORGANIC MATTER IN RIVER LEA WATER.

(*B)

Elements of
Organic Matter
in Parts per
100,000.

1868 1869 1870 1871 1872 1873 1874 1875 1876 1877 1878 1879 1880 1881 1882 1883 1884 1885 1886 1887 1888 1889 1890 1891 1892 1893 1894

.700
.68
.66
.64
.62
.600
.58
.56
.54
.52
.500
.48
.46
.44
.42
.400
.38
.36
.34
.32
.300
.28
.26
.24
.22
.20
.18
.16
.14
.12
.100
.08
.06
.04
.02
.000



March, October, November, and December only ; whilst, in the case of the deep-wells it is calculated for the whole year :—

Year.	Thames.	Lea.	Deep-Wells.
1885	•233	•277	•292
1886	•319	•336	•355
1887	•307	•352	•365
1888	•304	•322	•358
1889	•311	•358	•438
1890	•280	•296	•371
1891	•217	•247	•287
1892	•292	•332	•271
1893	•281	•314	•276
1894	•303	•319	•293

A comparison of these numbers shows that the total combined nitrogen in the Thames waters was higher in 1894 than in any year since 1889 ; whilst, in the Lea, the average amount of this element observed in 1894 was exceeded by that found in 1892. Of the deep-well waters, that of the Kent Company showed a marked decrease, whilst the waters of the Colne Valley and East London Companies and of the Tottenham Local Board of Health all showed a slight increase, the average in the four deep-well waters being somewhat higher than in any year since 1890.

Table I. exhibits the amount of chlorine present in each of the waters, and indicates that, on no occasion, has brackish or tidal water gained access to the Companies' reservoirs. The amount of chlorine in the Thames-derived water was, on the average, slightly less than in the year 1893, whilst the water delivered by the New River Company contained slightly less, and that supplied by the East London Company somewhat more in 1894 than in the previous year. Of the deep-well waters, that delivered by the Kent Company contained less, whilst that sent out by the Colne Valley and East London Companies and by the Tottenham Local Board of Health contained in every case, slightly more chlorine in 1894 than in the previous year.

Table K. gives the hardness of the various waters. The term "hardness" is used to denote the proportion of carbonate of lime, or its equivalent of other soap-destroying substances, present in 100,000 parts, by weight, of the water. The variations in hardness for the several descriptions of water during recent years are given in the following Table :—

Year.	Thames.	Lea.	Kent.	Colne Valley.	Tottenham.	East London Deep Well.
1885	18°·7	20°·0	27°·9	4°·8	20°·4	—
1886	19°·2	20°·3	29°·4	4°·5	21°·3	—
1887	19°·3	20°·8	29°·9	5°·7	20°·5	—
1888	20°·0	22°·0	30°·2	7°·5	22°·5	—
1889	20°·2	22°·1	29°·9	7°·0	24°·6	—
1890	20°·4	22°·0	29°·7	7°·9	23°·8	—
1891	20°·3	21°·8	29°·4	8°·9	24°·4	18°·9
1892	20°·8	21°·9	28°·4	7°·5	23°·9	19°·2
1893	19°·6	21°·4	28°·3	7°·1	23°·1	20°·2
1894	18°·8	20°·1	25°·5	7°·4	23°·5	19°·4

The waters derived from the Thames and Lea, and the deep-wells of the Kent Company were all markedly softer than in recent years; whilst the deep-well water of the East London Company and of the Tottenham Local Board of Health was of about the usual average hardness. The hardness of the metropolitan water supply is almost entirely due to the presence of bi-carbonate of lime in solution, which can be readily removed by treating the water with lime, as is successfully done by the Colne Valley Company. Thus the water pumped from the chalk by the Colne Valley Company is, originally, of about the same degree of hardness as the Kent Company's supply; but by treatment with lime before delivery, its hardness is reduced to about one-fourth of its original amount. The hardness of the river-water supplies can be reduced in the same manner. This mode of softening would appear to be the most economical, unless it can be shown that less than one-eightieth of the total supply is used for washing, for it entails only about one-eightieth of the expense incurred by the private consumer in the shape of additional soap.

Lastly, Table L. records the averages, for the past year, of each determination already referred to, and thus gives a general survey of the thermal and chemical character of the water delivered by each Company during the year 1894.

In the following Table are recorded the results of my observations respecting the freedom from turbidity or otherwise of the various waters; and, for the purpose of comparison, the results of my first observations in 1868 are also included:—

COMPANIES OR LOCAL AUTHORITIES.	Number of occasions when clear and transparent.		Number of occasions when slightly turbid.		Number of occasions when turbid.		Number of occasions when very turbid.	
	1868.	1894.	1868.	1894.	1868.	1894.	1868.	1894.
THAMES.								
Chelsea - - - -	7	12	2	0	1	0	2	0
West Middlesex - - -	12	10	0	2	0	0	0	0
Southwark - - - -	1	12	5	0	4	0	2	0
Grand Junction - - -	9	12	2	0	1	0	0	0
Lambeth - - - - -	6	12	1	0	2	0	3	0
LEA.								
New River - - - -	10	12	2	0	0	0	0	0
East London - - - -	3	12	8	0	1	0	0	0
DEEP WELLS.								
Kent - - - - -	8	12	3	0	1	0	0	0
Colne Valley - - - -	-	12	-	0	-	0	-	0
Tottenham Local Board of Health - - - - -	-	9	-	3	-	0	-	0
East London - - - -	-	8	-	4	-	0	-	0

The Table exhibits the great improvement which the Water Companies who draw their supplies from rivers have effected in filtration since I first began these examinations for turbidity in 1868. In that year, seven samples were so turbid as to be highly repulsive in appearance, nine samples were turbid, and no less than 20 slightly turbid, whereas during the year 1894 not one of the samples of filtered water was turbid and only two, out of 84 examined, slightly so. On the other hand, seven samples of deep-well water, which does not require filtration, were slightly turbid owing, in all probability, to disturbance by the pumping machinery.

TABLE A.

TEMPERATURE (in Centigrade degrees) of the METROPOLITAN WATERS, as delivered from the different Companies' Mains.

COMPANIES OR LOCAL AUTHORITIES.	1894.												
	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
THAMES.													
(Unfiltered Water)	5.2	6.9	8.0	14.0	12.5	14.1	16.7	18.7	13.8	12.3	12.3	5.5	10.9
Chelsea - - -	4.7	6.7	7.3	12.3	11.9	14.3	17.8	18.2	15.4	13.3	11.6	6.7	11.7
West Middlesex - -	6.5	6.9	6.5	10.2	10.1	12.7	15.7	16.7	13.1	13.4	11.2	7.5	10.9
Southwark - - -	7.3	7.2	7.8	13.5	12.8	16.1	18.0	19.7	14.8	14.3	12.5	7.5	12.6
Grand Junction - -	6.3	6.7	8.0	13.2	12.9	14.3	18.5	19.1	15.7	13.9	12.4	7.0	12.3
Lambeth - - -	5.5	6.9	7.6	12.8	12.5	14.7	17.8	18.3	14.8	13.2	11.8	6.7	11.9
LEA.													
(Unfiltered Water)	8.3	5.2	8.9	11.7	12.2	14.2	16.7	17.7	13.7	13.0	11.3	6.7	11.6
New River - - -	6.7	6.5	6.8	12.0	12.2	13.5	15.7	18.1	14.7	13.3	11.3	7.3	11.5
(Unfiltered Water)	5.3	5.7	7.6	11.8	12.0	15.3	16.7	19.2	14.3	13.5	10.6	6.7	11.6
East London - - -	6.7	7.2	6.7	12.1	11.9	14.5	16.7	18.0	15.7	13.5	11.5	7.2	11.8
DEEP WELLS.													
Kent - - - - -	10.6	10.3	10.5	12.1	11.8	12.7	13.7	13.8	12.7	12.7	12.0	10.8	12.0

TABLE B.

WEIGHT OF SOLID MATTERS in 100,000 parts of the WATERS.

		1894.												
COMPANIES OR LOCAL AUTHORITIES.		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	THAMES.													
	(Unfiltered Water)	30.80	33.08	31.92	28.80	28.60	28.24	26.24	27.44	28.12	30.00	31.48	36.40	30.09
	Chelsea - - -	32.30	31.84	30.24	28.00	26.40	25.46	25.36	24.32	24.86	27.48	28.60	34.42	28.27
	West Middlesex - -	31.24	32.34	30.42	26.48	26.10	25.88	24.40	23.30	25.50	28.90	28.34	34.50	28.12
	Southwark - - -	30.50	33.24	30.60	26.70	26.60	26.70	25.96	25.60	26.46	29.00	30.44	35.00	29.90
	Grand Junction - -	30.34	32.42	30.70	27.60	27.66	27.86	26.06	25.64	26.42	28.66	29.56	34.64	28.96
	Lambeth - - -	30.54	33.16	31.10	28.30	27.60	27.54	26.06	25.74	26.76	29.48	29.88	34.40	29.21
Inner Circle.	LEA.													
	(Unfiltered Water)	33.48	32.00	28.60	29.40	29.03	29.24	28.52	27.84	27.52	32.28	33.60	35.48	30.59
	New River - - -	33.50	32.26	29.68	27.60	27.30	28.10	28.44	27.08	28.50	30.84	31.68	33.76	29.85
	(Unfiltered Water)	38.60	38.44	35.68	30.80	32.68	32.92	30.20	27.28	28.52	34.32	40.88	40.80	34.26
	East London - - -	35.10	38.50	35.74	30.10	29.12	27.80	25.90	27.12	29.68	31.98	36.18	39.10	32.19
Outer Circle.	DEEP WELLS.													
	Kent - - - - -	38.50	37.90	37.76	37.54	36.92	38.70	38.34	38.32	37.20	37.44	38.80	37.64	37.92
	Colne Valley - - -	17.50	21.04	19.00	16.60	15.90	20.72	17.92	17.94	22.04	18.76	20.26	19.68	18.95
	Tottenham - - -	40.76	41.42	41.16	40.58	40.56	41.16	—	41.34	41.46	41.14	41.52	42.08	41.20
	East London - - -	28.90	29.70	28.90	27.70	28.60	26.24	28.72	28.60	39.70	39.80	40.00	38.52	32.12

TABLE C.

ORGANIC CARBON in 100,000 parts of the WATERS.

1894.														
COMPANIES OR LOCAL AUTHORITIES.		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	THAMES.													
	(Unfiltered Water)	.334	.237	.266	.216	.245	.384	.330	.277	.239	.238	.733	.179	.307
	Chelsea - - -	.224	.267	.231	.151	.090	.138	.154	.163	.174	.171	.185	.240	.182
	West Middlesex - -	.247	.280	.228	.126	.133	.203	.169	.153	.172	.162	.415	.190	.207
	Southwark - - -	.293	.289	.227	.104	.151	.183	.177	.179	.178	.167	.467	.186	.217
	Grand Junction - -	.240	.262	.249	.142	.166	.194	.169	.160	.186	.163	.333	.157	.202
	Lambeth - - -	.246	.273	.238	.127	.149	.220	.196	.181	.181	.191	.503	.205	.226
	LEA.													
Outer Circle.	(Unfiltered Water)	.249	.128	.135	.109	.105	.119	.154	.092	.110	.079	.285	.068	.136
	New River - - -	.093	.127	.129	.058	.046	.071	.070	.061	.061	.056	.117	.103	.083
	(Unfiltered Water)	.408	.152	.277	.165	.201	.275	.234	.203	.178	.148	.465	.168	.239
	East London - - -	.215	.204	.149	.118	.123	.112	.125	.095	.128	.096	.292	.181	.153
	DEEP WELLS.													
	Kent - - - - -	.027	.036	.037	.034	.023	.037	.038	.035	.035	.027	.043	.024	.033
	Colne Valley - - -	.085	.131	.085	.099	.085	.127	.095	.123	.080	.073	.146	.100	.102
	Tottenham - - -	.065	.075	.075	.053	.070	.062	—	.069	.059	.064	.065	.065	.066
East London - - -	.084	.088	.054	.114	.038	.085	.081	.087	.060	.078	.083	.078	.078	

Metropolitan Water Supply.

TABLE D.
ORGANIC NITROGEN in 100,000 parts of the WATERS.

COMPANIES OR LOCAL AUTHORITIES.		1894.												
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	THAMES.													
	(Unfiltered Water)	*065	*039	*035	*035	*045	*059	*052	*050	*037	*041	*121	*028	*051
	Chelsea -	*034	*026	*020	*020	*013	*013	*020	*019	*016	*026	*026	*024	*022
	West Middlesex -	*022	*045	*029	*015	*024	*021	*015	*022	*020	*025	*041	*017	*024
	Southwark -	*045	*023	*033	*015	*021	*019	*022	*019	*016	*024	*054	*030	*027
	Grand Junction -	*034	*022	*035	*018	*022	*021	*019	*017	*019	*018	*038	*023	*024
	Lambeth -	*036	*019	*022	*021	*023	*027	*017	*015	*015	*023	*043	*019	*023
	LEA.													
	(Unfiltered Water)	*040	*013	*027	*023	*025	*035	*031	*017	*015	*026	*055	*016	*027
	New River -	*011	*017	*015	*011	*011	*008	*008	*012	*008	*007	*011	*013	*011
Outer Circle.	(Unfiltered Water)	*075	*027	*042	*029	*038	*050	*046	*040	*035	*034	*096	*032	*045
	East London -	*027	*033	*023	*017	*020	*014	*015	*014	*013	*020	*025	*030	*021
	DEEP WELLS.													
	Kent -	*003	*007	*003	*006	*006	*007	*006	*005	*006	*007	*006	*006	*006
	Colne Valley -	*018	*018	*017	*022	*022	*027	*019	*019	*020	*022	*015	*017	*020
	Tottenham -	*019	*010	*016	*010	*013	*013	—	*011	*018	*011	*010	*012	*013
	East London -	*023	*016	*016	*008	*011	*015	*019	*018	*018	*007	*024	*012	*016

TABLE E.
PROPORTIONAL AMOUNT OF ORGANIC ELEMENTS, that in the KENT COMPANY'S WATER during the Nine Years ending December 1876 being taken as 1.

COMPANIES OR LOCAL AUTHORITIES.		1894.												
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	THAMES.													
	(Unfiltered Water)	6'8	4'7	5'1	4'3	4'9	7'5	6'5	5'5	4'7	4'7	14'5	3'5	6'1
	Chelsea - - -	4'4	5'0	4'3	2'9	1'8	2'6	2'9	3'1	3'2	3'3	3'6	4'5	3'6
	West Middlesex - - -	4'6	5'5	4'4	2'4	2'7	3'8	3'1	3'0	3'3	3'2	7'7	3'5	3'9
	Southwark - - -	5'7	5'3	4'4	2'0	2'9	3'4	3'4	3'4	3'3	3'2	8'8	3'7	4'1
	Grand Junction - - -	4'6	4'8	4'8	2'7	3'2	3'6	3'2	3'0	3'5	3'1	6'3	3'1	3'8
	Lambeth - - -	4'8	4'9	4'4	2'5	2'9	4'2	3'6	3'3	3'3	3'6	9'3	3'8	4'2
	LEA.													
Outer Circle.	(Unfiltered Water)	4'9	2'4	2'7	2'2	2'2	2'6	3'1	1'8	2'1	1'8	5'8	1'4	2'8
	New River - - -	1'8	2'4	2'4	1'2	1'0	1'3	1'3	1'2	1'2	1'1	2'2	2'0	1'6
	(Unfiltered Water)	8'2	3'0	5'4	3'3	4'1	5'5	4'7	4'1	3'6	3'1	9'3	3'4	4'8
	East London - - -	4'1	4'0	2'9	2'3	2'4	2'1	2'4	1'8	2'4	2'0	5'3	3'6	2'9
	DEEP WELLS.													
	Kent - - -	0'6	0'7	0'7	0'7	0'5	0'7	0'7	0'7	0'7	0'6	0'8	0'5	0'7
	Colne Valley - - -	1'7	2'5	1'7	2'1	1'8	2'6	1'9	2'4	1'7	1'6	2'7	2'0	2'1
Outer Circle.	Tottenham - - -	1'4	1'4	1'7	1'1	1'4	1'3	—	1'4	1'3	1'3	1'3	1'3	1'4
	East London - - -	1'8	1'8	1'2	2'1	0'8	1'7	1'7	1'8	1'8	1'4	1'8	1'5	1'6

TABLE F.
AMMONIA in 100,000 parts of the WATERS.

COMPANIES OR LOCAL AUTHORITIES.		1894.												
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	THAMES.													
	(Unfiltered Water)	*032	*010	*006	*005	*008	*005	*016	*008	*006	*006	*006	*010	*011
	Chelsea -	0	0	0	0	0	0	0	0	0	0	0	0	0
	West Middlesex -	0	0	0	0	0	0	0	0	0	0	0	0	0
	Southwark -	0	0	0	0	0	0	0	0	0	0	0	0	0
	Grand Junction -	0	0	0	0	0	0	0	0	0	0	0	0	0
	Lambeth -	0	0	0	0	0	0	0	0	0	0	0	0	0
	LEA.													
	(Unfiltered Water)	*010	*006	*004	*002	*005	*005	*003	*006	*002	*007	*008	*002	*005
	New River -	0	0	0	0	0	0	0	0	0	0	0	0	0
Outer Circle.	(Unfiltered Water)	*018	*014	*010	*004	*012	*008	*014	*007	*009	*012	*026	*030	*014
	East London -	0	0	0	0	0	0	0	0	0	0	0	0	0
	DEEP WELLS.													
	Kent -	0	0	0	0	0	0	0	0	0	0	0	0	0
	Colne Valley -	*018	*006	*028	*039	*004	*110	*028	*056	*088	*066	*054	*058	*046
	Tottenham -	*040	*050	*036	*010	*002	*042	—	*070	*076	*070	*068	*080	*048
	East London -	*017	*018	0	trace	0	0	0	*001	*028	*062	*038	*050	*018

TABLE G.

NITROGEN as NITRATES and NITRITES in 100,000 parts of the WATERS.

COMPANIES OR LOCAL AUTHORITIES.	1894.												
	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
THAMES.													
(Unfiltered Water)	·318	·321	·251	·194	·183	·175	·130	·174	·144	·222	·135	·358	·217
Chelsea - - -	·315	·282	·281	·213	·186	·158	·137	·127	·142	·195	·217	·316	·214
West Middlesex - -	·319	·324	·271	·193	·184	·152	·122	·117	·150	·213	·200	·345	·216
Southwark - - -	·339	·322	·247	·175	·183	·191	·116	·111	·161	·207	·191	·351	·216
Grand Junction - -	·331	·312	·263	·209	·209	·183	·138	·130	·159	·219	·203	·357	·226
Lambeth - - -	·336	·324	·233	·210	·202	·174	·155	·136	·157	·210	·193	·364	·229
LEA.													
(Unfiltered Water)	·307	·333	·263	·263	·234	·202	·169	·119	·178	·250	·282	·415	·251
New River - - -	·326	·307	·282	·211	·225	·240	·151	·156	·154	·225	·264	·359	·242
(Unfiltered Water)	·434	·356	·287	·197	·204	·214	·136	·086	·127	·242	·290	·332	·246
East London - - -	·420	·399	·309	·199	·194	·184	·085	·073	·111	·168	·247	·286	·223
DEEP WELLS.													
Kent - - -	·480	·495	·506	·485	·518	·476	·501	·459	·430	·489	·489	·519	·483
Colne Valley - - -	·482	·494	·446	·424	·406	·469	·527	·484	·478	·515	·540	·547	·492
Tottenham - - -	·009	·011	·079	·045	·062	trace	—	·006	trace	·011	·012	·042	·025
East London - - -	trace	0	0	·011	·018	·034	·013	·013	·036	·017	·071	·032	·020

TABLE H.

TOTAL combined NITROGEN in 100,000 parts of the WATERS.

1894.													
COMPANIES OR LOCAL AUTHORITIES.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
THAMES.													
(Unfiltered Water)	·409	·368	·291	·233	·235	·238	·195	·231	·186	·268	·261	·394	·276
Chelsea - - -	·349	·308	·301	·233	·204	·171	·157	·146	·158	·221	·243	·340	·236
West Middlesex - -	·341	·367	·300	·208	·208	·173	·137	·139	·170	·238	·241	·362	·240
Southwark - - -	·384	·345	·280	·190	·204	·210	·138	·130	·177	·231	·245	·381	·243
Grand Junction - -	·365	·334	·298	·227	·231	·204	·157	·147	·178	·237	·141	·380	·242
Lambeth - - -	·372	·343	·305	·231	·225	·201	·172	·151	·172	·233	·236	·383	·252
LEA.													
(Unfiltered Water)	·355	·351	·293	·288	·263	·241	·203	·141	·195	·282	·344	·433	·282
New River - - -	·337	·324	·297	·222	·236	·248	·159	·168	·162	·232	·275	·372	·253
(Unfiltered Water)	·574	·395	·337	·229	·252	·271	·194	·132	·170	·286	·407	·389	·303
East London - - -	·447	·432	·332	·216	·214	·198	·100	·087	·124	·188	·272	·316	·244
DEEP WELLS.													
Kent - - -	·488	·502	·509	·491	·524	·483	·507	·464	·445	·496	·495	·525	·494
Colne Valley - - -	·515	·517	·486	·478	·521	·587	·567	·549	·570	·591	·599	·612	·549
Tottenham - - -	·061	·062	·124	·063	·077	·048	—	·075	·081	·079	·078	·103	·077
East London - - -	·037	·031	·016	·019	·029	·049	·032	·032	·077	·075	·126	·085	·051

TABLE I.

CHLORINE in 100,000 parts of the WATERS.

COMPANIES OR LOCAL AUTHORITIES.		1894.												
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	THAMES.													
	(Unfiltered Water)	2·3	2·2	1·9	1·7	1·8	1·8	1·9	1·8	1·9	1·9	1·7	1·8	1·9
	Chelsea - - -	2·2	2·2	1·9	1·7	1·8	1·7	1·8	1·8	1·9	1·9	1·7	1·7	1·9
	West Middlesex - -	2·2	2·2	1·9	1·7	1·8	1·8	1·8	1·8	1·9	1·9	1·8	1·7	1·9
	Southwark - - -	2·1	2·2	1·9	1·7	1·8	1·8	1·8	1·8	1·9	1·9	1·8	1·7	1·9
	Grand Junction - -	2·1	2·2	1·9	1·7	1·8	1·8	1·8	1·8	1·9	1·9	1·8	1·7	1·9
	Lambeth - - -	2·2	2·2	1·9	1·7	1·8	1·8	1·8	1·8	1·9	1·9	1·7	1·8	1·9
	LEA.													
	(Unfiltered Water)	2·0	1·8	1·8	1·6	1·7	1·7	1·7	1·7	1·7	1·7	1·8	1·7	1·7
Outer Circle.	New River - - -	1·9	1·9	1·8	1·6	1·6	1·7	1·7	1·7	1·8	1·7	1·7	1·7	1·7
	(Unfiltered Water)	2·3	2·2	2·1	1·9	2·0	2·0	2·0	2·0	2·0	2·1	2·2	2·1	2·1
	East London - - -	2·3	2·3	2·1	1·9	2·0	2·0	2·0	2·2	2·1	2·1	2·1	2·2	2·1
	DEEP WELLS.													
	Kent - - -	2·3	2·3	2·2	2·1	2·1	2·3	2·3	2·3	2·2	2·2	2·2	2·2	2·2
	Colne Valley - - -	2·3	2·3	2·2	2·1	2·1	2·4	2·3	2·2	2·3	2·3	2·2	2·4	2·3
	Tottenham - - -	3·0	3·0	2·8	2·8	2·8	3·0	—	2·9	2·9	2·8	2·8	2·9	2·9
	East London - - -	2·1	2·1	2·0	2·0	2·1	2·1	2·0	2·0	2·8	2·6	2·7	2·5	2·3

TABLE K.

DEGREES of HARDNESS (1 deg. = 1 part of carbonate of lime, or its equivalent,) in 100,000 parts of the WATERS.

COMPANIES OR LOCAL AUTHORITIES.		1894.												
		Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Mean.
Inner Circle.	THAMES.													
	(Unfiltered Water)	18.6	21.2	20.0	18.9	19.7	17.1	16.6	16.9	17.7	19.7	18.0	23.0	19.0
	Chelsea - - -	20.0	19.7	19.7	18.9	17.7	16.9	16.9	16.0	16.3	18.9	18.3	22.7	18.5
	West Middlesex - - -	20.0	19.4	19.7	18.3	18.0	16.6	16.0	15.4	16.9	19.4	18.0	22.7	18.4
	Southwark - - -	18.3	20.6	20.3	18.6	18.3	17.7	17.1	17.7	17.1	19.7	18.6	22.7	18.9
	Grand Junction - - -	18.6	20.0	19.7	19.1	18.9	18.3	17.1	17.4	17.1	19.7	18.6	22.7	18.9
	Lambeth - - -	18.9	20.3	20.0	19.4	18.9	18.0	17.7	17.4	17.4	19.7	18.6	22.4	19.1
	LEA.													
	(Unfiltered Water)	20.0	21.8	19.1	19.7	20.3	19.4	18.6	17.4	18.3	22.1	20.9	23.6	20.1
	New River - - -	21.8	20.9	20.0	19.1	19.1	18.9	19.1	18.3	20.0	21.2	20.6	22.7	20.1
Outer Circle.	(Unfiltered Water)	22.7	24.8	23.0	20.9	22.4	22.4	20.0	18.0	18.3	22.7	24.2	25.7	22.1
	East London - - -	22.1	23.0	22.4	19.4	19.7	18.3	16.3	16.3	18.3	19.7	21.8	22.7	20.0
	DEEP WELLS.													
	Kent - - -	26.0	25.1	24.8	24.8	25.1	25.4	26.0	26.0	25.7	25.4	25.1	26.0	25.5
	Colne Valley - - -	6.4	8.3	8.3	6.3	6.7	6.4	6.4	6.0	10.3	8.1	7.7	7.9	7.4
	Tottenham - - -	22.1	22.7	23.9	23.3	22.1	22.1	—	23.6	26.6	23.6	24.2	23.9	23.5
	East London - - -	17.7	17.7	20.6	18.0	19.1	17.7	16.3	17.7	22.1	22.1	21.2	22.7	19.4

TABLE L.

AVERAGES FOR 1894.

The numbers in the Table relate to 100,000 parts of each Water.

COMPANIES OR LOCAL AUTHORITIES.		Temperature in Cen- tigrade Degrees.	Total Solid Matters.	Organic Carbon.	Organic Nitrogen.	Ammonia.	Nitrogen, as Nitrates and Nitrites.	Total combined Ni- trogen.	Chlorine.	Total Hardness.	Proportional Amount of Organic Elements in the Kent Company's Water during the 9 years ending Dec. 1876 being taken as 1.
Inner Circle.	THAMES.	°									
	(Unfiltered Water)	10.9	30.09	.307	.051	.011	.217	.276	1.9	19.0	6.1
	Chelsea	11.7	23.27	.182	.022	0	.214	.236	1.9	18.5	3.6
	West Middlesex	10.9	23.12	.207	.024	0	.216	.240	1.9	18.4	3.9
	Southwark	12.6	29.90	.217	.027	0	.216	.243	1.9	18.9	4.1
	Grand Junction	12.3	23.96	.202	.024	0	.226	.242	1.9	18.9	3.8
	Lambeth	11.9	29.21	.226	.023	0	.229	.252	1.9	19.1	4.2
	LEA.										
	(Unfiltered Water)	11.6	30.59	.136	.027	.005	.251	.282	1.7	20.1	2.8
	New River	11.5	29.85	.083	.011	0	.242	.253	1.7	20.1	1.6
Outer Circle.	(Unfiltered Water)	11.6	34.26	.239	.045	.014	.246	.303	2.1	22.1	4.8
	East London	11.8	32.19	.153	.021	0	.223	.244	2.1	20.0	2.9
	DEEP WELLS.										
	Kent	12.0	37.92	.033	.006	0	.488	.494	2.2	25.5	0.7
	Colne Valley	—	18.95	.103	.020	.046	.492	.549	2.3	7.4	2.1
	Tottenham	—	41.20	.066	.013	.048	.025	.077	2.9	23.5	1.4
	East London	—	32.12	.078	.016	.018	.020	.051	2.3	19.4	1.6

NOTE.—The numbers in these tables may be converted into grains per imperial gallon by multiplying them by 7, and then moving the decimal point one place to the left.

BACTERIOSCOPIC EXAMINATION.

An overwhelming amount of evidence has been accumulated showing that cholera and typhoid fever are, the first generally, and the second frequently, propagated through the agency of drinking water. The fact that, in an epidemic of cholera, the disease generally travels from the mouth of a river up stream is only apparently inconsistent with this statement. In the first instance the disease almost invariably arrives, in this country at least, at the mouths of rivers by sea. The choleraic dejections are thrown into the river and are carried up stream, as far as the tide reaches; but there are few tidal rivers which are not navigable by barges far above the range of the tide. The bargemen almost invariably dip their drinking water out of the river, even in the tidal reaches, and consume it without any filtration. They thus become infected, and convey the zymotic poison up stream as far as the river is navigable, and still further by means of canals. The use of raw or imperfectly filtered water from such sources, for dietetic purposes, is, therefore, in times of epidemic especially, fraught with extreme danger. It has been established, however, by laborious bacteriological research, carried on chiefly in Germany, and especially at the Lawrence Experimental Station of the Massachusetts Board of Health, that *efficient* sand filtration is, practically, a perfect safeguard against the introduction of the cholera and typhoid bacilli into drinking water. To attain this desirable result, however, it has been no less convincingly shown that the filtration must be efficient, and that it is so in the case of the river water supplied to London is conclusively shown by the continued prevalence of a low rate of mortality from typhoid fever in the metropolis, which confirms my observations of the small number of ordinary river microbes found in the filtered waters of the various Companies, this being a much more severe test of efficient filtration than the mere observations of clearness or turbidity. It appears, however, from my most recent bacteroscopic determinations that it is especially difficult to secure efficient filtration during severe winter weather.

The bacterioscopic examination of water supplied to vast communities like London has consequently become an investigation of the highest importance from a hygienic point of view, and I am, therefore, each year devoting an increased amount of attention to the bacteriological character of the various waters supplied to the Metropolis.

The samples of water submitted to this examination during the year 1894 were collected at the works of the respective Companies immediately after the water left the filters, and before it was pumped into the distributing mains; and, whenever possible, separate observations were made upon the effluent of each individual filter at the time in use, so as to ascertain which filter, if any, was not doing its work efficiently. It is of little use examining, bacterioscopically, the filtered water as delivered in London, because this is a mixture of the effluents from all the filters, and moreover the multiplication of ordinary river, or harmless microbes, is, except during very cold weather, so rapid that the number is generally increased many fold between the filtration works and the standpipes in London. By the examination of the water as it issues from the filters, the utmost freedom from microbes, or maximum degree of sterility, of each sample of water is determined. This utmost freedom from bacterial life, after all sources of contamination have been passed, is obviously the most important moment in the history of the water; for, the smaller the number of microbes found in a given volume at that moment, the less is the probability of pathogenic organisms being present; and, although the non-pathogenic may afterwards multiply indefinitely, this is of no consequence in the primary absence of the pathogenic. In this determination of maximum sterility, it is, of course, of the utmost importance that multiplication should be prevented during the few hours which, in the absence of suitable arrangements at the works of the different Companies, must necessarily elapse before the samples can be submitted to cultivation in my laboratory. This is secured by immediately sealing, hermetically, the glass tubes containing the samples and then packing them in ice. At the freezing point of water, microbes either do not multiply at all, or do so with extreme slowness.

Although the collection of samples for microbe cultivation on the works of the seven different Water Companies drawing their supplies from rivers, these works

being situated at wide distances apart, entails great additional labour, which can only be performed by an expert in bacteriology, it is the only trustworthy method by which the efficient filtration and comparative bacterial purity of the Metropolitan waters can be ascertained. Whenever this examination proves any filter to be working unsatisfactorily, the attention of the engineer in charge is at once directed to the circumstance.

Of collateral interest also is the contemporaneous bacterial condition of the Thames and Lea at the intakes of the Companies drawing from these rivers, and I have therefore submitted to bacterioscopic examination samples of the unfiltered water passing the intakes of the various Companies at the time the filtered samples were collected. In addition, I have frequently examined the water which is pumped by some of the Companies from the gravel flanking the Thames at Hampton, and also samples of Thames and Lea water after more or less prolonged storage in subsidence reservoirs, but before filtration. I have undertaken this heavy additional work at the request of the Associated Metropolitan Water Companies, who have unreservedly placed their plant at my disposition for this purpose, and have afforded me every facility, at present in their power, for carrying on this important inquiry.

It is very desirable, however, that small bacteriological laboratories should be established at Hampton, for the examination of the Thames-derived waters, and at Green Lanes and Lea Bridge for the examination of the very important supplies drawn from the Lea by the New River and East London Companies.

The deep-well water of the Kent Company does not require filtration, and the samples for microbe cultivation were therefore taken from the water as it was discharged from the pumps.

In connection with this work my best thanks are due to my assistant, Mr. W. T. Burgess, F.I.C., for his very valuable help in the conduct of this investigation.

The results of these examinations made during the year 1894 are contained in the following tables; and, in order that the conditions, as regards storage and filtration, under which the seven Companies drawing from rivers work, I have added, in each case, the amount of storage before filtration, the depth of sand on the filter beds, and the rate of filtration. These additional data are taken from the monthly reports of the Water Examiner:—

TABLE No. 1.—MICROBE DETERMINATIONS in UNFILTERED WATERS.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Thames at Hampton - -	5.2	56,630	6.9	6,947	8.0	9,480	14.0	2,520
Ditto after storage for 14.7 days (Chelsea Company).	—	—	—	—	—	—	12.5	1,170
Ditto after storage for 6 days (Lambeth Company).	—	—	—	—	—	—	—	—
Gravel water (Scutthark Company).	—	—	—	—	—	—	9.6	230
Ditto (Grand Junction Company).	—	—	—	—	—	—	—	—
Water from artificially laid gravel (Grand Junction Co.)	—	—	—	—	—	—	—	—
Lea at Hertford - -	—	—	—	—	—	—	—	—
New River Company's Chad- well Spring.	—	—	—	—	—	—	—	—
Mixture of Lea water and Chadwell Spring.	—	—	—	—	—	—	—	—
New River Cut at Green Lanes.	6.9	9,450	5.2	1,395	8.9	1,300	11.7	2,220
Ditto after passing through first reservoir.	—	—	—	—	—	—	—	—
Ditto after passing through second reservoir, just before filtration.	—	—	6.2	1,053	7.8	420	12.7	460
Lea at Angel Road - -	5.3	56,050	5.7	8,947	7.6	4,920	11.8	4,020
Ditto after storage for 15.1 days.	5.3	888	5.3	1,079	6.8	580	13.2	1,420

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Thames at Hampton	12.5	2,880	14.1	1,840	16.7	2,860	18.7	2,080
Ditto after storage for 14.7 days (Chelsea Company).	12.5	2,040	14.1	10,020	18.2	520	18.2	440
Ditto after storage for 6 days (Lambeth Company).	—	—	—	—	—	680	—	—
Gravel water (Southwark Company).	10.7	120	—	—	—	—	16.7	324
Ditto (Grand Junction Company).	—	—	13.2	550	—	—	—	—
Water from artificially laid gravel (Grand Junction Co.)	12.5	180	13.9	1,490	—	—	—	—
Lea at Hertford	—	—	13.4	6,960	14.7	6,660	16.9	7,380
New River Company's Chadwell Spring.	—	—	—	—	—	—	—	—
Mixture of Lea water and Chadwell Spring.	—	—	—	—	—	—	—	—
New River Cut at Green Lanes.	—	—	14.2	1,840	16.7	1,560	17.7	1,260
Ditto after passing through first reservoir.	—	—	—	—	16.4	780	—	—
Ditto after passing through second reservoir, just before filtration.	12.2	380	14.2	200	16.6	260	17.7	360
Lea at Angel Road	12.0	4,280	15.3	3,380	16.7	4,320	19.2	3,560
Ditto after storage for 15.1 days.	12.3	300	15.3	520	17.2	1,120	19.2	1,080

SOURCE OF SAMPLE.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Mean. Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
Thames at Hampton	13.8	3,030	12.3	3,500	12.3	20,080	5.5	16,300	10,708
Ditto after storage for 14.7 days (Chelsea Company).	16.1	460	12.5	520	12.2	660	5.4	720	1,839
Ditto after storage for 6 days (Lambeth Company).	—	—	—	260	—	3,440	—	6,020	2,600
Gravel water (Southwark Company).	16.0	50	13.7	60	—	—	—	—	157
Ditto (Grand Junction Company).	—	—	—	—	12.7	360	—	—	455
Water from artificially laid gravel (Grand Junction Co.)	—	—	—	—	—	—	—	—	885
Lea at Hertford	12.7	18,200	12.4	8,060	—	—	—	—	9,452
New River Company's Chadwell Spring.	11.5	300	12.4	1,940	—	—	—	—	1,120
Mixture of Lea water and Chadwell Spring.	—	—	12.6	4,060	—	—	—	—	4,060
New River Cut at Green Lanes.	13.7	1,360	12.7	2,520	11.3	1,170	6.7	5,120	2,654
Ditto after passing through first reservoir.	—	—	—	—	—	—	—	—	780
Ditto after passing through second reservoir just before filtration.	14.5	520	13.0	1,000	—	—	6.0	2,400	705
Lea at Angel Road	14.3	2,080	13.5	4,920	10.6	7,860	6.7	9,400	9,478
Ditto after storage for 15.1 days.	14.7	1,360	13.5	880	11.0	2,780	6.4	810	1,071

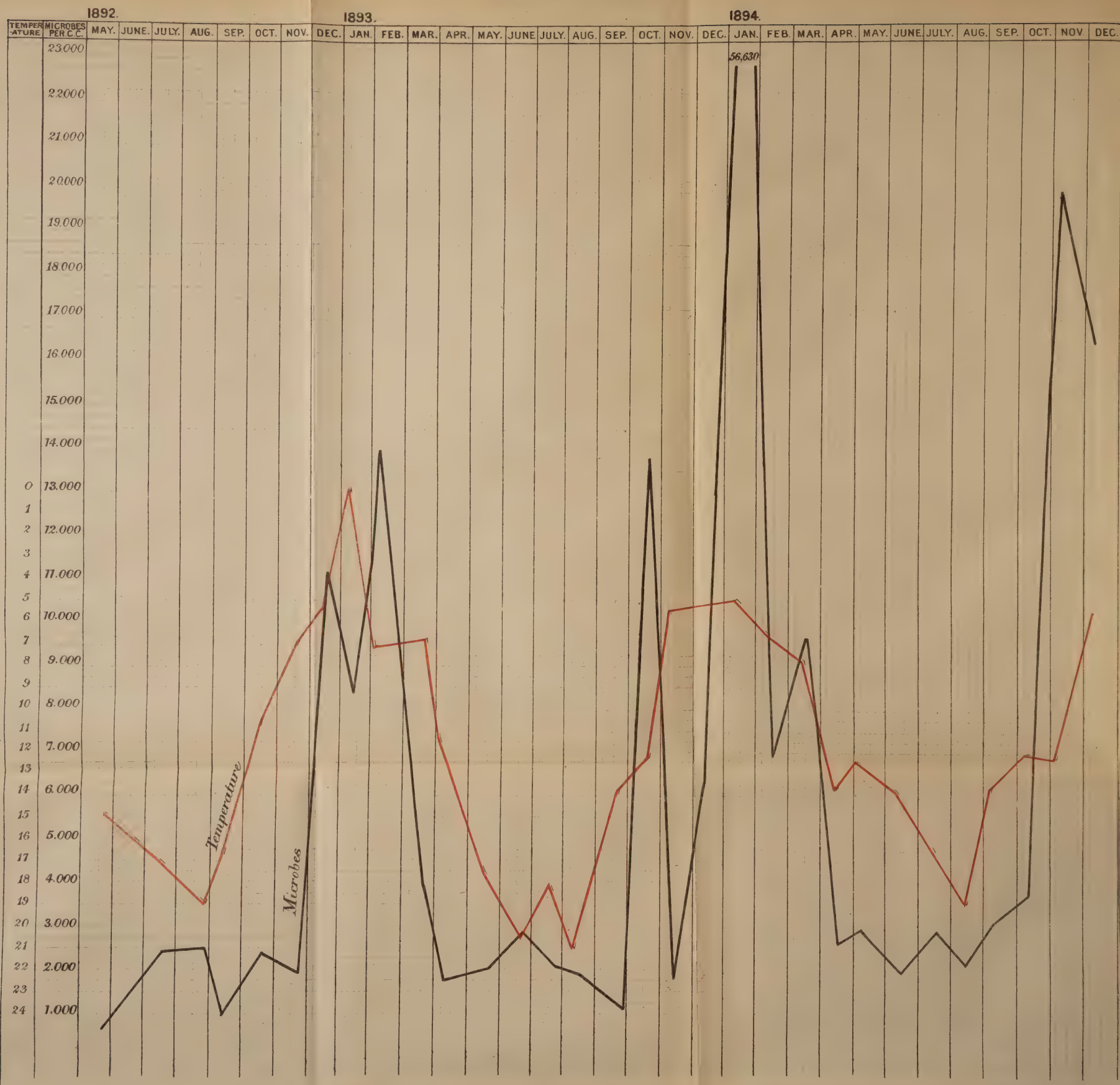
These results of the bacterioscopic examination of the unfiltered waters used by the Metropolitan Water Companies are, again, both interesting and instructive. They demonstrate, in the first place, how very much the bacterial quality of the water may differ from its chemical quality; thus, in chemical composition, the water pumped from the gravel near the banks of the Thames does not differ materially from the Thames water itself, and it is also generally turbid; but, whilst the raw Thames water contained during the year 1894, on the average, 10,708 microbes per cubic centimetre, the water abstracted from the natural gravel beds by the

Southwark Company contained, on the average, only 157 per c.c. and that pumped from the same source by the Grand Junction Company only 455 per c.c. Indeed, the gravel water not unfrequently exceeded, in bacterial purity, the filtered Thames water sent into London. This enormous amelioration of Thames water, as regards bacterial life, led the Grand Junction Company to lay down artificial beds of gravel upon which Thames water was either pumped or permitted to flow, and through which it was allowed slowly to percolate. The use of such artificially laid gravel was commenced in 1893, but has not been altogether successful. During the past year, I have only had the opportunity of examining two samples from this source, one in May which contained only 180 microbes per c.c., whilst the Thames at the same time contained 2,880, and another in June, when the sample contained 1,490, whilst the Thames contained 1,840 per c.c.

In the second place, the table shows the great bacterial inferiority of the Lea at the New River Company's intake above Hertford, as compared with its condition at the East London Company's intake at Angel Road, which is about 17 miles lower down the river. Thus in June, the Lea at the New River Company's intake contained no less than 6,960 microbes per c.c., whilst at Angel Road it contained scarcely half as many. In July, the river at the New River intake contained 6,660 microbes per c.c., whilst at Angel Road it contained only 4,320. Again, in September, the Lea at the New River intake contained the enormous number of 18,200 microbes per c.c., whilst at Angel Road it contained, on the same day, only 2,080 in the same volume; and again in October, whilst the water at the New River intake contained 8,060, at the Angel Road intake it contained only 4,920 microbes per c.c. This result is extremely surprising, and the observations are too numerous to make it referable to accident. I would therefore draw the attention of the Lea Conservancy Board to this unexpected condition of the higher portion of the river. It was, on every occasion, enormously inferior bacterially to the Thames at Hampton. This bacterially impure water, abstracted, from the Lea above the Hertford sewer outfall by the New River Company, becomes immediately mixed with the purer water of the Chadwell Spring, by which the number of microbes was, in October, reduced from 8,060 to 4,060 per c.c. It then flows 25 miles to Green Lanes through the New River Cut, and frequently receives, on its way, water pumped from various deep wells. The New River Cut obviously acts as an elongated storage reservoir, for the water becomes depopulated of microbes to a very great extent during its flow. Thus, in October, when the mixture of river Lea and Chadwell spring water contained, at the head of the cut, 4,060 microbes per c.c., the water arriving on the same day at Green Lanes contained only 2,520, and by storage in two consecutive reservoirs this number was further reduced to 1,000 before the water entered the filter beds. Although the storage capacity of these two reservoirs is but small, the table shows that, in every case, it caused a very great reduction in the number of bacteria, and, on the average of the whole year, whilst the water arriving at Green Lanes contained 2,654 microbes per c.c., the same water after passing through these two reservoirs, contained only 705 per c.c.

This table also shows, in a very striking manner, the very great bacterial amelioration which the Lea water taken in at Angel Road experiences by a storage of 15 days in the reservoirs of the East London Company. For, whilst the average number of microbes at the intake was 9,478, the average number passing from the storage reservoirs to the filters was only 1,071 per c.c. In like manner, the storage of the Chelsea Company for nearly 15 days, and that of the Lambeth Company for 6 days effect, as shown in the table, a very great reduction in the number of microbes; thus, in April, when the raw Thames water contained 2,520 microbes per c.c. the stored water of the Chelsea Company contained only 1,170. In July, when the river contained 2,860 microbes per c.c., the stored water of the Chelsea Company contained only 520, and that of the Lambeth Company only 680. In October, when the Thames water contained 3,800 microbes per c.c., the stored water of the Chelsea Company contained only 520 and that of the Lambeth Company only 260. In November, when the Thames contained 20,080 microbes per c.c., the Chelsea Company's stored water contained only 660 and that of the Lambeth Company 3,440. And again in December, when the Thames contained 16,300 microbes per c.c., the

DIAGRAM A.



Chelsea Company's stored water contained 720 and that of the Lambeth Company 6,020. Taking the average of the whole year, the Thames contained 10,708, the Chelsea stored water 1,839, and the Lambeth stored water 2,600 microbes per c.c.

In the third place, the table exhibits the very great variations which occur in the raw river waters in the course of the year. These variations have been attributed at different times to changes of temperature, or exposure to varied amounts of sunshine, low temperature appearing to favour either the multiplication or preservation of microbes, whilst exposure to sunshine has been recently shown, by Dr. Marshall Ward, to be very inimical to bacterial life.

Another condition which might naturally be expected to exercise considerable influence upon the amount of microbial life in river water, is the amount of rainfall or, in other words, the volume of water flowing in the river; for the larger the volume the more thoroughly must the larger, and especially the smaller, affluents have been washed out into the main stream. It is interesting to study the action of these three conditions of temperature, sunshine, and volume of water separately. But this is rendered somewhat difficult by the circumstance that, as a rule, the intensity of these agents varies *pari passu*, thus low temperature, little sunshine, and large volume of water are apt to prevail simultaneously in winter; whilst high temperature, much sunshine, and small volume of water generally occur together in summer. In the following tables and diagrams, I have endeavoured to bring the number of microbes in raw Thames water into contrast with each of these conditions in succession. The following table exhibits the comparison of the number of microbes per c.c. with the temperature of the water, from the commencement of these observations in May 1892 to the end of the year 1894:—

COMPARISON OF NUMBER OF MICROBES with the TEMPERATURE OF THAMES WATER.

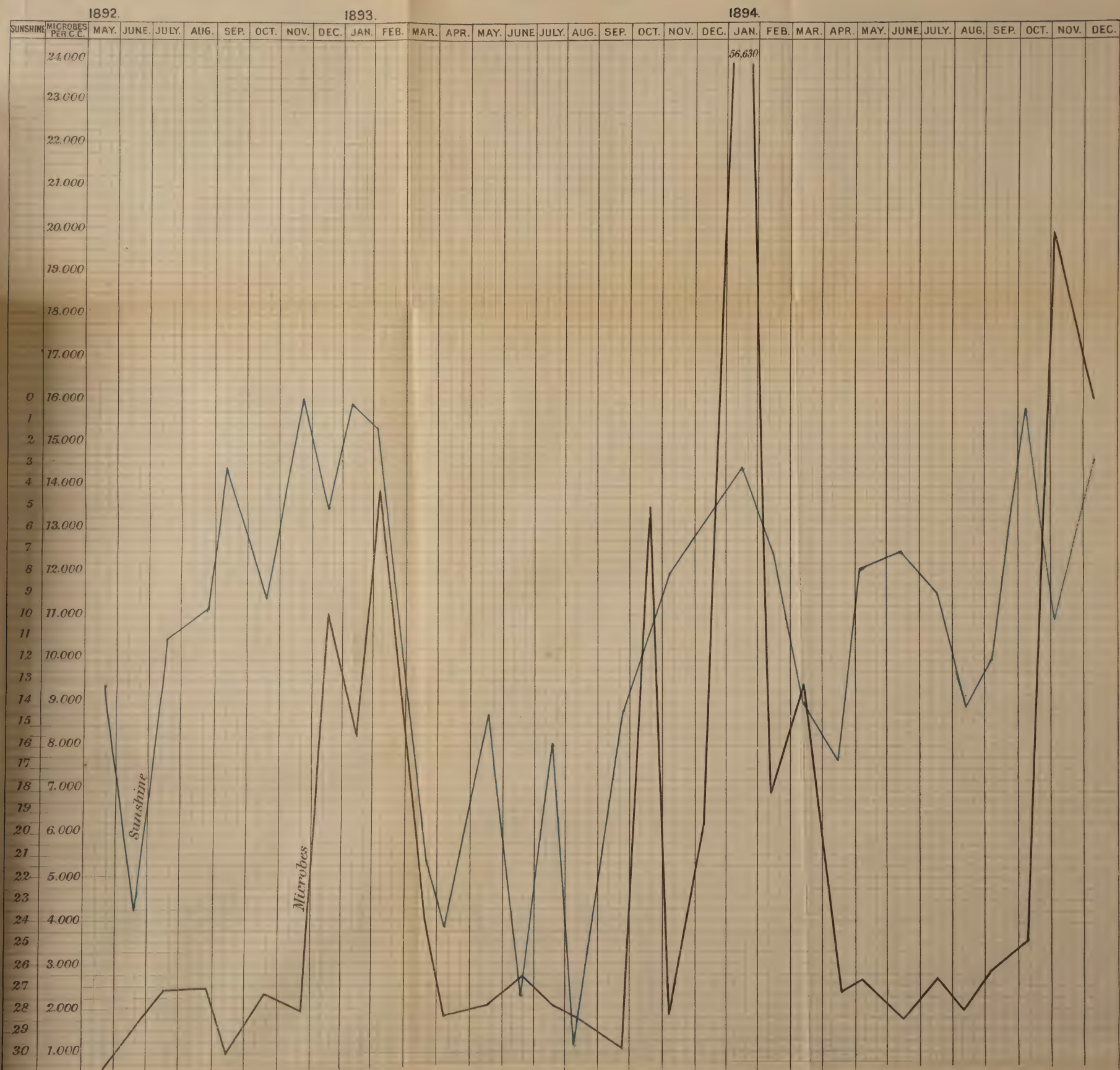
DATE.	Temperature C.	No. of Microbes per c.c.	DATE.	Temperature C.	No. of Microbes per c.c.
1892.			1893.		
May 20th	14.8	631	September 25th	13.8	1,158
June 20th	16.2	1,658	October 19th	12.5	13,790
July 13th	17.2	2,268	November 9th	5.6	1,789
August 25th	19.1	2,421	December 7th	5.4	6,316
September 12th	16.6	947			
October 17th	10.5	2,316	1894.		
November 22nd	6.7	1,868	January 15th	5.2	56,630
December 15th	5.6	11,158	February 13th	6.9	6,947
			March 13th	8.0	9,480
1893.			April 13th	14.0	2,520
January 9th	0	8,210	May 3rd	12.5	2,880
February 4th	7.6	13,947	June 11th	14.1	1,840
March 20th	7.2	3,737	July 16th	16.7	2,860
April 5th	11.6	1,763	August 11th	18.7	2,080
May 16th	17.6	2,052	September 7th	13.8	3,080
June 20th	20.4	2,789	October 10th	12.2	3,800
July 19th	18.2	2,132	November 5th	12.3	20,080
August 10th	21.3	1,895	December 10th	5.5	16,800

The inferences to be drawn from the figures in this table are exhibited much more clearly by the annexed diagram A., in which the ordinates represent, respectively, the temperature of the water in centigrade degrees, and the number of microbes

per c.c., whilst the abscissae record the dates when the samples were taken ; and, as the effect of temperature, if any, would cause the number of degrees and of microbes to be inversely related to each other, the degrees of temperature in the table count from above downwards whilst the numbers representing microbes count from below upwards. By this arrangement, the curve of temperature ought, more or less, to coincide, in direction at all events, with the curve representing the number of microbes, if these data depend upon each other to any material extent, in the manner just indicated. The diagram shows that whilst there is, to some extent, a general rise in the number of microbes when the temperature falls, there are many very striking exceptions, thus in May, June, July, August, and September 1892, when the temperature was more or less high, the number of microbes per c.c. was small ; but in October and November, the number of microbes per c.c. still remained small, although the temperature in these months was much lower. In December, however, of the same year, the temperature remained much the same as in November, but the microbes underwent an enormous increase. Again in the following year, the temperature in January, on the day when the sample was collected, was even lower, being at the freezing point, but the microbes were considerably less numerous. On the other hand, in February, when the temperature was higher, the microbes were much more numerous than even in the previous December. In March, whilst the temperature remained practically the same as in February, the number of microbes per c.c. fell from 13,947 to 3,737. Again in April, whilst the temperature was still moderate ($11^{\circ}\cdot6$ C.), the number of microbes fell still further to less than 2,000 per c.c. In May, June, July, and August the temperature was high and the number of microbes uniformly small ; but, in September, there was a great reduction of temperature accompanied, however, also by a considerable diminution in the number of microbes. In October, there was again, as in February, an enormous development of bacteria, whilst the temperature was only slightly lower than in the previous month, when the number was remarkably small. In November again, with a much lower temperature, there was a reduction in the number of microbes from 13,790 in the previous month to 1,789 per c.c. During the following month of December 1893, and January, February, and March 1894, whilst the temperature remained low and nearly constant, the microbes were sometimes as low as 6,316, and sometimes as high as 56,630 ; but during the following months April, May, June, July, August, September, and October, the increase of temperature and diminution of microbes, and *vice versâ*, marched very much *pari passu*. In November, however, with no alteration of temperature as compared with the previous month, the number of microbes increased from 3,800 to 20,080 per c.c. ; whilst in December there was a diminution alike in temperature and number of microbes. This table, therefore, demonstrates that, whilst coincidences between a high number of microbes and a low temperature, and the reverse, are not wanting, some other condition entirely overbears the effect, if any, of temperature.

The next table and diagram B. exhibit in like manner the comparison between sunshine and the number of microbes in Thames water. For the records of sunshine I am indebted to the kindness of Professor E. J. Stone, F.R.S., the Radcliffe Observer at Oxford, and to Mr. James B. Jordan of Staines. Finding the Oxford observations differed but little from those taken at Staines, and, as Staines is nearer to, although higher up, the river than the place where my samples were collected, I have used the Staines records only in the table, except on a few dates, when Mr. Jordan's observations had been intermitted. The samples were always collected at about 2.30 p.m., and the record of sunshine includes the two previous days and the day of collection up to 2.30 p.m. I have also worked out the comparison, omitting in one case the record of the first day's sunshine, and in the second place taking only the hours of sunshine on the day, and up to the time, of collection. But the results of these last two comparisons are so similar to those obtained by the three days' record that it is not necessary to give them here.

DIAGRAM B.



COMPARISON of NUMBER of MICROBES with HOURS of SUNSHINE during Three previous Days.

DATE.	Hours of Sunshine during 3 Days at Staines.	No. of Microbes per c.c.	DATE.	Hours of Sunshine during 3 Days at Staines.	No. of Microbes per c.c.
1892.			1893.		
May 20th	H. M. 13 10	631	September 25th	H. M. 14 5	1,158
June 20th	23 30	1,658	October 19th	11 5	13,790
July 13th	11 10	2,268	November 9th	7 45	1,789
August 25th	9 55	2,421	December 7th	5 45	6,316
September 12th	3 15	947	1894.		
October 17th	9 15	2,316	January 15th	2 45	56,630
November 22nd	0	1,868	February 13th	7 0	6,947
December 15th	5 20	11,158	March 13th	13 40	9,480
1893.			April 13th	16 20	2,520
January 9th	0	8,210	May 3rd	7 30	2,880
February 4th	1 20	13,947	June 11th	6 35	1,940
March 20th	21 30	3,737	July 16th	8 45	2,860
April 5th	24 30	1,763	August 11th	13 55	2,080
May 16th	14 30	2,052	September 7th	11 50	3,080
June 20th	27 25	2,789	October 10th	0	3,800
July 19th	15 55	2,132	November 5th	9 50	20,080
August 10th	29 55	1,895	December 10th	2 15	16,300

The table and diagram demonstrate that whilst during the months May to November 1892 there was an enormous variation in the amount of sunshine, namely, from 23 hours 30 minutes in June to none in November, there was practically, no corresponding variation in the number of microbes. In December of that year there was much more sunshine preceding the taking of the sample than in the previous month, but the number of microbes instead of being simultaneously diminished, increased from less than 2,000 to over 11,000 per c.c.; and, although there was no sunshine on the three days previous to the taking of the sample in January 1893, the number of microbes actually decreased to the extent of about 3,000 per c.c. In the following month of February, however, nearly 14,000 microbes per c.c. coincided with but little more than an hour of sunshine. In the month of March again, an enormous increase of sunshine was followed by a corresponding decrease of microbes, and this relation was continued to the following month; but in May, whilst there was a great diminution of sunlight, there was practically no increase of microbes; and in June, with an enormous increase of sunlight, there was the anomaly of an increase, though slight, in the number of bacteria. In the following July and August, there were enormous alternations of sunshine and gloom with no corresponding differences in the number of microbes; whilst in September, with a great diminution of sunshine, there was observed one of the smallest numbers of microbes recorded. In the following month of October, however, a small diminution of sunshine was accompanied by a very large increase of microbes. On the other hand, in the following month of November, with a still smaller amount of sunshine, there was an enormous reduction in the number of microbes, but in December, a small diminution of sunshine was followed by a large increase of microbes.

In January 1894, a small amount of sunshine was followed by an enormous number (56,630) of microbes. In the following month of February, however, this number was reduced to about 7,000, although the amount of sunshine was not much greater. In the following month of March, there was a rise both of sunshine and number of bacteria, whilst in April there was an increase of sunshine and a

great diminution in the number of microbes. In May, however, there was a great decrease of sunshine, but practically no increase of microbes. In June there was rather less sunshine than in the previous month, but also fewer microbes, whilst in July an increase of sunlight was accompanied by an increase of microbes. In August, September, and October, with each diminution of sunshine there was a corresponding increase of microbes; but in November, with a great increase in the amount of sunlight, there was also an increase of microbes from 3,800 to 20,080 per c.c., whilst in the month of December, a considerable diminution of sunlight was followed by a marked decrease of microbes.

It is thus evident, as in the case of temperature, that there is some other condition which entirely masks or overbears the influence, if any, of sunlight in the destruction of microbes in the river waters. This condition is the amount of rainfall higher up the river, or in other words, the volume of water flowing along the river bed.

The following table and diagram C. show this very conclusively. They compare the volume of water in the river, as gauged at Teddington Weir, with the number of microbes found in the raw Thames water at Hampton on the same day. In this diagram the numbers representing the flow of the river in millions of gallons per 24 hours, and the number of microbes per c.c. of water, both run from the bottom of the diagram upwards. For the gaugings of the Thames at Teddington weir, I am indebted to the kindness of Mr. C. J. More, the engineer to the Thames Conservancy Board. Comparing the numbers in the table and the curves on the diagram, we find, with very few exceptions, a remarkably close relation between these numbers respectively; thus, during the months of May, June, July, August, September, and October 1892, the river was low, and the number of microbes small. In December of the same year the flow of the river had risen to 2,115 millions of gallons, and the microbes to 11,158 per c.c.; whilst, in January 1893, the flow had decreased to 915 millions of gallons, and the microbes to 8,210 per c.c. In February of the same year the flow of water over Teddington weir had risen to 3,255 millions of gallons, and the number of microbes simultaneously to 13,945 per c.c.; whilst in March, with a reduced flow of 1,175 millions of gallons, the number of microbes came down to 3,727, and this was followed, in April, by the further diminution of microbes to 1,763 per c.c., whilst the flow of the river was simultaneously reduced to 985 millions of gallons. In the following months of May, June, July, August, and September, the river remained low, and so did the number of microbes; but, in October, with an increased flow from 159 million gallons to 543 millions, the number of microbes increased from 1,158 to 13,790. In the following month of November the flow of the river was reduced to 249 millions of gallons, and the microbes to 1,789 per c.c.; whilst, in December, the flow of the river increased to 375 million gallons, and the microbes to 6,316 per c.c.

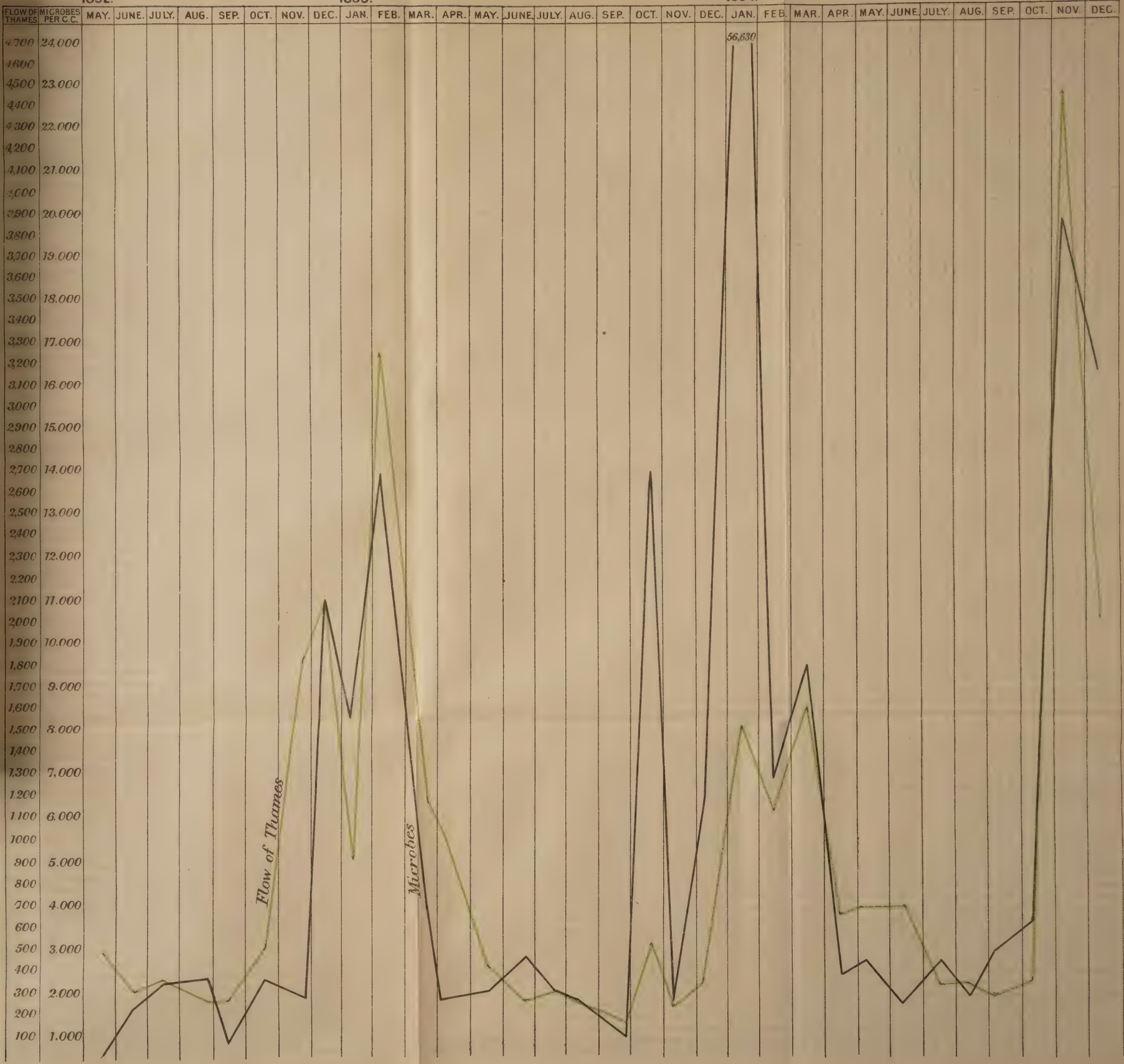
In January 1894 the flow of the river increased to 1,510 millions, and the microbes to the enormous number of 56,630 per c.c. In the following months of February, March, April, May, and June, the two curves follow each other with remarkable regularity, whilst in July, August, September, and October, both the flow of the river and the number of microbes remained low, there being a slight increase in both from September to October. Then came the tremendous flood of November, the highest on record, as I am informed by the engineer to the Thames Conservancy Board, the flow of the river over Teddington weir on the 18th having reached nearly 20,136 millions of gallons. The sample for microbe cultivation was, however, taken on the 5th, when the flow only amounted to 4,462 millions of gallons per day; but this increase from 396 millions of gallons per day in October to 4,462 millions on the 5th of November was accompanied by an increase in the number of microbes from 3,800 on the 10th of October to 20,080 per c.c. on the 5th of November; whilst, in December, the flow of the river had fallen to 2,058 millions of gallons per day, and the number of microbes to 16,300 per c.c. The only exception of any importance to the rule that the number of microbes follows the rate of flow of the river occurring during the 32 months through which these observations have been continued, happened in November 1892, when the flow of the river increased from 501 millions of gallons in October, to 1,845 millions in November, whilst the microbes actually diminished in number from 2,316 to 1,868 per c.c. Neither the

DIAGRAM C.

1892.

1893.

1894.



sunshine nor the temperature records of these two months, however, afford any explanation of this anomalous result, for there was a good deal of sunshine in October before the collection of the sample, and the temperature was higher; whilst in November no ray of sunshine reached the Thames during the three days preceding the taking of the sample, and the temperature was nearly 4 degrees Centigrade lower than in the preceding month. Between October 17th and November 22nd, 1892, when the sample for microbe cultivation was collected, however, the river had several times been in such high flood as to be bank full. Thus between October 30th and November 2nd the flow had never been less than 3,000 millions of gallons per day, and on November 2nd reached 4,240 millions. Again on the 17th the flow was 3,305 millions, and on the 18th 4,165 millions. It then gradually receded to 1,845 millions on the day when the sample was drawn. Thus the Thames basin had been twice very thoroughly washed out immediately before the time when the November sample was taken. There had previously been no such floods after the 5th of January in that year. This condition of things affords a fairly satisfactory explanation of the anomalous result yielded by this sample.

COMPARISON OF NUMBER OF MICROBES with VOLUME OF THAMES at TEDDINGTON WEIR.

DATE.	Flow of River.	No. of Microbes per c.c.	DATE.	Flow of River.	No. of Microbes per c.c.
1892.	Gallons.		1893.	Gallons.	
May 20th - - -	480,000,000	631	September 25th - -	159,300,000	1,158
June 20th - - -	335,000,000	1,658	October 19th - - -	542,700,000	13,790
July 13th - - -	385,200,000	2,268	November 9th - - -	249,300,000	1,789
August 25th - -	276,300,000	2,421	December 7th - - -	375,000,000	6,316
September 12th -	270,000,000	947			
October 17th - -	501,300,000	2,316	1894.		
November 22nd -	1,845,000,000	1,868	January 15th - - -	1,510,000,000	56,630
December 15th -	2,105,000,000	11,158	February 13th - -	1,140,000,000	6,947
			March 13th - - -	1,600,000,000	9,480
1893.			April 13th - - -	690,000,000	2,520
January 9th - - -	915,000,000	8,210	May 3rd - - -	740,700,000	2,880
February 4th - -	3,255,000,000	13,947	June 11th - - -	745,200,000	1,840
March 20th - - -	1,175,000,000	3,737	July 16th - - -	369,900,000	2,860
April 5th - - -	985,000,000	1,763	August 11th - - -	360,900,000	2,080
May 16th - - -	420,000,000	2,052	September 7th - -	336,600,000	3,080
June 20th - - -	277,200,000	2,789	October 10th - - -	396,000,000	3,800
July 19th - - -	333,000,000	2,132	November 5th - - -	4,462,200,000	20,080
August 10th - -	264,600,000	1,895	December 10th - -	2,058,300,000	16,300

These results, therefore, demonstrate that the number of microbes in Thames water is determined mainly by the rate of flow of the river, or, in other words, by the rainfall, and but slightly, if at all, by either the presence or absence of sunshine, or a high or low temperature. With regard to the effect of sunshine, the interesting researches of Dr. Marshall Ward leave no doubt that this agent is a powerful germicide; but, it is probable that the germicidal effect is greatly diminished, if not entirely prevented, when the solar rays have to pass through a comparatively thin stratum of water before they reach the living organisms. If this be so, however, it can be no matter of surprise that the effect of sunshine upon bacterial life in the great mass of Thames water should be nearly if not quite imperceptible.

The following tables register the bacterial condition of the water issuing from the filter beds of the various Metropolitan Companies during the year 1894.

The Chelsea Company.

Amount of storage	-	-	-	13·5 days.
Average thickness of sand upon filters	-	-	-	4 feet.
Average rate of filtration per square foot per hour	-	-	-	1·75 gallon.
Maximum percentage of microbes removed	-	-	-	99·96
Minimum percentage of microbes removed	-	-	-	99·14
Average percentage of microbes removed	-	-	-	99·59

TABLE 2.—MICROBE DETERMINATIONS in the CHELSEA COMPANY'S WATER.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.		
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
Thames unfiltered water -	5·2	56,630	6·9	6,947	8·0	9,480	14·0	2,520	
Chelsea Company's supply -	3·2	64	6·0	8	7·3	20	12·9	10	
SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.		
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
Thames unfiltered water -	12·5	2,880	14·1	1,840	16·7	2,860	18·7	2,080	
Chelsea Company's supply -	12·4	6	14·5	12	18·4	36	18·5	18	
SOURCE OF SAMPLE.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
Thames unfiltered water -	13·8	3,080	12·3	3,800	12·3	20,080	5·5	16,300	10,708
Chelsea Company's supply -	16·2	22	12·4	9	11·7	8	5·3	22	20

This table shows that the Chelsea Company delivered, during the whole year, water of a very high degree of bacterial purity, rivalling in many cases, deep-well water in this respect. In the month of November, when the Thames at the intake contained no less than 20,080 microbes per c.c., this Company's water, which was being pumped from the general filter wells into the supply mains, contained only 8.

West Middlesex Company.

Amount of storage	-	-	-	6·3 days.
Average thickness of sand on filter	-	-	-	2·6 feet.
Average rate of filtration per square foot per hour	-	-	-	1·3 gallon.
Maximum percentage of microbes removed	-	-	-	99·98
Minimum percentage of microbes removed	-	-	-	99·04
Average percentage of microbes removed	-	-	-	99·65

TABLE 3.—MICROBE DETERMINATIONS in the WEST MIDDLESEX COMPANY'S WATER.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Thames unfiltered water -	5·2	56,630	6·9	6,947	8·0	9,480	14·0	2,520
West Middlesex Company's supply.	5·5	112	6·3	12	7·0	6	12·8	10

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Thames unfiltered water -	12·5	2,880	14·1	1,840	16·7	2,860	18·7	2,080
West Middlesex Company's supply.	12·0	26	14·3	10	17·2	6	17·5	20

SOURCE OF SAMPLE.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
Thames unfiltered water -	13·8	3,080	12·3	3,800	12·3	20,080	5·5	16,300	10,708
West Middlesex Company's supply.	14·2	8	12·3	14	11·3	4	5·3	6	20

Except in the month of January, when the number of microbes was 112 per c.c., this Company delivered water of a high degree of bacterial purity rivalling that of the deep-well water of the Kent Company. The average number of microbes per c.c. during the whole year amounting to scarcely 20 per c.c.; and in November it was only 4 per c.c., when the raw river water at the intake contained 20,080.

Southwark and Vauxhall Company.

Amount of storage -	-	-	-	1·6 days.
Average thickness of sand on filters -	-	-	-	2·5 feet.
Average rate of filtration per square foot per hour -	-	-	-	1·5 gallon.
Maximum percentage of microbes removed	-	-	-	99·94
Minimum percentage of microbes removed	-	-	-	92·59
Average percentage of microbes removed -	-	-	-	98·31

TABLE 4.—MICROBE DETERMINATIONS in the SOUTHWARK COMPANY'S WATER.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Thames unfiltered water -	5·2	56,630	6·9	6,947	5·0	9,480	14·0	2,520
Southwark :—								
No. 2 filter -	—	—	—	—	—	—	—	—
No. 3 „ -	—	—	—	—	—	—	—	—
No. 4 „ -	6·0	48	7·3	4	7·4	48	11·7	22
No. 8 „ -	6·3	404	7·1	240	—	—	13·9	86

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Thames unfiltered water -	12·5	2,880	14·1	1,840	16·7	2,560	18·7	2,080
Southwark :—								
No. 2 filter -	—	—	—	—	—	—	—	—
No. 3 „ -	—	—	14·5	32	17·3	212	—	—
No. 4 „ -	11·5	16	—	—	—	—	17·6	10
No. 8 „ -	12·1	30	14·9	60	17·0	68	17·8	92

SOURCE OF SAMPLE.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
Thames unfiltered water	13·8	3,080	12·3	3,900	12·3	20,080	5·5	16,300	10,703
Southwark :— No. 2 filter	15·1	16	—	—	—	—	—	—	16
No. 3 „	—	—	—	—	—	—	5·2	206	150
No. 4 „	—	—	12·4	8	11·8	40	—	—	25
No. 8 „	14·8	40	—	—	—	—	5·1	52	119

The filtration plants of the Chelsea and West Middlesex Companies deliver the filtered water into general receptacles or wells, from which the samples for bacterioscopic examination were drawn, and there was consequently no opportunity at these works, for obtaining separate samples from each of the filter beds. At the Southwark Company's works, however, I have been able to obtain samples from several of the separate filters, and the above table, giving the results of the examination of these samples, shows several cases in which effective bacterial filtration was not attained. Thus in January, No. 8 filter was delivering water which contained 404 bacteria, or their spores, in each c.c. And again in the following month, the same filter was passing water containing 240 microbes per c.c. In July the water being delivered by No. 3 filter contained 212; and again in December, the same filter delivered water containing 206 microbes per c.c. Except in July, all these transgressions of the standard of 100 microbes per c.c. occurred when the raw river water was bacterially very impure, containing, as it did in January 56,630, in February 6,947, and in December 16,300 microbes per c.c. The very small storage possessed by this Company is no doubt mainly responsible for these abnormal results. The Act of Parliament obtained last Session will enable the Company soon to remedy this defect. Already they have considerably increased the area of their filters, and their bacterial record for 1894 is a considerable improvement upon that of 1893.

Grand Junction Company

Amount of storage	-	-	-	-	3·4 days.
Average thickness of sand on filters	-	-	-	-	1·9 foot.
Average rate of filtration per square foot per hour	-	-	-	-	1·9 gallon.
Maximum percentage of microbes removed	-	-	-	-	99·85
Minimum percentage of microbes removed	-	-	-	-	84·89
Average percentage of microbes removed	-	-	-	-	98·06

TABLE NO. 5.—MICROBE DETERMINATION in the GRAND JUNCTION COMPANY'S WATER.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Thames unfiltered water	5·2	56,630	6·9	6,947	8·0	9,480	14·0	2,520
Grand Junction Company's Hampton filter well.	5·3	464	7·0	184	7·6	128	12·8	150
Grand Junction Company's Kew filter well.	5·4	352	6·5	44	7·4	20	13·2	24
Grand Junction Company's Kew South filter.	6·0	168	6·8	28	7·8	62	14·2	22

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Thames unfiltered water	12.5	2,880	14.1	1,840	16.7	2,860	18.7	2,080
Grand Junction Company's Hampton filter well.	12.5	40	14.7	52	17.7	104	—	—
Grand Junction Company's Kew filter well.	12.3	74	14.7	278	17.5	54	17.9	60
Grand Junction Company's Kew South filter.	12.4	20	14.7	26	17.8	34	18.2	144

SOURCE OF SAMPLE.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
Thames unfiltered water	13.8	3,080	12.3	3,800	12.3	20,080	5.5	16,300	10,708
Grand Junction Company's Hampton filter well.	14.2	60	12.4	52	12.3	124	5.8	48	128
Grand Junction Company's Kew filter well.	13.8	28	13.3	46	11.7	14	5.8	24	83
Grand Junction Company's Kew South filter.	14.0	28	—	—	12.0	6	6.5	24	51

The small amount of storage possessed by this Company renders it difficult for them at all times to maintain efficient bacterial filtration, and five of the samples collected at the Kew works during the year contained an excess of microbes or their spores, over 100 per c.c., and four out of the 23 samples collected at the Kew works also contained an abnormal number of microbes. Notwithstanding, however, the much less favourable condition of the raw river water, the record of this Company for the past year is better than that for the year 1893. Most of the abnormal results occurred when the raw river water was bacterially in a very bad condition.

Lambeth Company.

Amount of storage	-	-	-	-	-	6 days.
Average thickness of sand on filters	-	-	-	-	-	2.8 feet.
Average rate of filtration per square foot per hour	-	-	-	-	-	2.37 gallons.
Maximum percentage of microbes removed	-	-	-	-	-	99.92
Minimum percentage of microbes removed	-	-	-	-	-	98.70
Average percentage of microbes removed	-	-	-	-	-	99.34

TABLE No. 6.—MICROBE DETERMINATIONS in the LAMBETH COMPANY'S WATER.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Thames unfiltered water	5.2	56,630	6.9	6,947	8.0	9,480	14.0	2,520
Lambeth Company's supply	4.5	292	7.3	44	7.5	8	13.2	40

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Thames unfiltered water	12.5	2,880	14.1	1,840	16.7	2,860	18.7	2,080
Lambeth Company's supply	12.4	14	14.6	24	17.8	24	17.8	12

SOURCE OF SAMPLE.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
Thames unfiltered water -	13°8	3,080	12°3	3,800	12°3	20,080	5°5	16,800	10,708
Lambeth Company's supply -	14°9	26	17°8	17	12°0	68	5°2	38	51

This table shows that only on one occasion during the entire year did the number of microbes exceed 100 per c.c.; and this occurred in January when the Thames was bacterially exceedingly impure. On all other occasions, when my samples were drawn the numbers never approached the limit of 100 per c.c.; and in March, when the raw Thames water contained 9,480 microbes per c.c., the filtered water delivered by this Company contained only 8. This is consequently a very good record of efficient filtration.

New River Company.

Average amount of storage	-	-	-	-	4·5 days.
Average thickness of sand on filters	-	-	-	-	1·8 foot.
Average rate of filtration per square foot per hour	-	-	-	-	2·17 gallons.
Maximum percentage of microbes removed	-	-	-	-	100
Minimum percentage of microbes removed	-	-	-	-	91·58
Average percentage of microbes removed	-	-	-	-	98·63

TABLE No. 7.—MICROBE DETERMINATIONS in the NEW RIVER COMPANY'S WATER.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
New River unfiltered water -	6°9	9,450	5°2	1,395	8°9	1,300	11°7	2,220
New River Company's supply—								
Main Well - - -	5°8	244	6°0	4	7°1	14	12°7	24
No. 1 Well - - -	—	—	—	—	—	—	12°6	12
No. 2 Well - - -	—	—	—	—	—	—	—	—
No. 3 Well - - -	7°2	60	—	—	—	—	—	—
No. 4 Well - - -	—	—	—	—	7°2	12	12°8	0
No. 7 Well - - -	—	—	—	—	—	—	—	—
No. 6 Well - - -	—	—	—	—	—	—	—	—

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
New River unfiltered water -	12°2	380	14°2	1,840	16°7	1,560	17°7	1,260
New River Company's supply—								
Main Well - - -	12°3	8	14°2	14	16°7	60	17°2	20
No. 1 Well - - -	11°8	4	13°9	156	—	—	—	—
No. 2 Well - - -	—	—	13°8	20	—	—	—	—
No. 3 Well - - -	—	—	—	—	—	—	—	—
No. 4 Well - - -	—	—	—	—	—	—	—	—
No. 7 Well - - -	—	—	—	—	—	—	—	—
No. 6 Well - - -	—	—	—	—	—	—	—	—

SOURCE OF SAMPLE.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
New River unfiltered water -	18·7	1,360	12·7	2,520	11·3	1,170	6·7	5,120	2,465
New River Company's supply—									
Main Well - - -	14·3	12	12·7	10	10·7	36	5·7	30	40
No. 1 Well - - -	—	—	—	—	—	—	—	—	57
No. 2 Well - - -	13·8	24	—	—	10·6	10	5·6	8	16
No. 3 Well - - -	—	—	—	—	—	—	6·1	10	35
No. 4 Well - - -	—	—	—	—	—	—	—	—	6
No. 6 Well - - -	—	40	—	—	11·2	32	—	—	32
No. 7 Well - - -	14·5	40	—	—	—	—	—	—	40

From this table it is seen that on two occasions only did the filtered water delivered by this Company contain a number of microbes in excess of 100 per c.c., and one of these occurred in January, when the water of the New River Cut contained an abnormally large number. On all other occasions the filtered water was bacterially of excellent quality; and in April, when the New River Cut contained 2,220 microbes per c.c., the filtered water in the main well contained only 24, whilst that of No. 1 filter well contained only 12, and the water delivered into No. 4 filter well was absolutely sterile.

East London Company.

Average amount of storage	-	-	-	-	15 days.
Average thickness of sand on filters	-	-	-	-	2 feet.
Average rate of filtration per square foot per hour	-	-	-	-	1·33 gallon.
Maximum percentage of microbes removed	-	-	-	-	99·91
Minimum percentage of microbes removed	-	-	-	-	87·87
Average percentage of microbes removed	-	-	-	-	97·76

TABLE 8.—MICROBE DETERMINATIONS IN EAST LONDON COMPANY'S WATER.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Lea at East London Co's Intake.	5·3	56,050	5·7	8,947	7·6	4,320	11·8	4,020
East London:								
No. 1 Essex Well - -	5·5	128	5·7	128	6·6	332	12·0	12
No. 2 Essex Well - -	—	—	—	—	6·7	344	—	—
No. 11 Bed - - -	—	—	—	—	—	—	12·0	80
No. 12 Bed - - -	—	—	5·3	52	—	—	11·8	240
Middlesex Well - -	—	—	—	—	6·6	166	—	—

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Lea at East London Co's Intake.	12°0	4,280	15°3	3,380	16°7	4,320	19°2	3,560
East London:								
No. 1 Essex Well - -	11°8	22	15°2	112	16°5	524	17°2	24
No. 2 Essex Well - -	12°1	4	14°2	12	16°4	66	17°2	24
No. 11 Bed - -	11°6	38	—	—	—	—	17°3	32
No. 12 Bed - -	11°7	42	15°4	4	—	—	—	—
Middlesex Well - -	11°4	68	14°2	60	16°5	66	17°4	60

SOURCE OF SAMPLE.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
Lea at East London Co's Intake.	14°3	2,080	13°5	4,920	10°6	7,860	6°7	9,400	9,478
East London:									
No. 1 Essex Well - -	14°3	12	13°3	14	10°3	28	6°2	50	116
No. 2 Essex Well - -	14°3	12	13°3	16	10°7	8	7°5	20	56
No. 11 Bed - -	14°3	24	—	—	10°6	30	6°4	88	49
No. 12 Bed - -	14°5	52	—	—	10°7	20	6°1	82	70
Middlesex Well - -	14°5	100	13°3	12	10°6	20	6°5	48	67

This table shows that, up to and including the month of July, this Company's filters were working somewhat irregularly. Except in the months of May, August, September, October, November, and December, there was always at least one sample containing a number of microbes, often exceeding considerably 100 per c.c. In January and February the raw river water was, bacterially, exceptionally impure, but in the other months, in which the failures occurred, this was not the case. After the month of July the limit of microbes was never surpassed. On several occasions the number was very low, and in November, when the Lea at the Company's intake contained 7,860 microbes per c.c., the filtered water in No. 2 Essex well contained only 8.

Kent Company.

This Company supplies only deep-well water, which is delivered in a clear and bright condition to consumers as it is pumped from the wells. It requires neither storing nor filtration. The water probably arrives at the wells absolutely free from microbes, the small number per c.c. usually found being, in all probability, derived from accidental and unavoidable contamination by the pumping machinery. The number per c.c. during the year was generally under 10. The maximum of 50 occurred in May, and 45 were found in this water in September; but in August the water being delivered was absolutely sterile, and the mean number of microbes per c.c. for the entire year was only 15 as compared with 13 in the year 1893.

TABLE 9.—MICROBE DETERMINATIONS IN KENT COMPANY'S WATER.

SOURCE OF SAMPLE.	JANUARY.		FEBRUARY.		MARCH.		APRIL.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Kent Company's New Well at Deptford	11°5	6	11°4	6	10°5	14	11°4	7

SOURCE OF SAMPLE.	MAY.		JUNE.		JULY.		AUGUST.	
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.
Kent Company's New Well at Deptford.	11·3	50	11·3	14	—	—	11·3	0

SOURCE OF SAMPLE.	SEPTEMBER.		OCTOBER.		NOVEMBER.		DECEMBER.		Mean Microbes per c.c.
	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	Temp. C.	Microbes per c.c.	
Kent Company's New Well at Deptford.	11·3	45	11·3	4	11·3	6	11·3	8	15

These bacteriological investigations have now been continued for 32 months; and I have supplemented them by an extensive series of experiments upon the effect of varying thicknesses of sand in the retention of microbes during filtration. These experiments, which were carried on continuously for more than a year, have shown that there are other conditions, besides thickness of the stratum of sand, which exercise a very powerful influence upon the result; for, even if it were admitted that thickness of filtering material had little or no influence upon effective bacterial purification, it could scarcely be conceded that the efficiency was *indirectly proportional* to the thickness of sand, and yet this conclusion would be almost inevitable, if efficient bacterial filtration depended exclusively or mainly upon thickness of filtering material, as is exemplified in the following series of results obtained with the experimental filters constructed at Lea Bridge by the East London Water Company for the express purpose of these trials. The samples referred to in this table were collected on the 15th of March 1894, when the river water at that time being supplied to the filters, contained 1,680 microbes per c.c.

Thickness of Sand on Filter.	Temperature C.	Number of Microbes per c.c. in Filtered Water.
1 foot	6·3	40
2 feet	6·3	106
3 "	6·2	446
4 "	6·4	842
5 "	6·4	1,424

These numbers are purely accidental, and the thickness of sand has nothing to do with them, as is seen from the results yielded by another set of samples obtained from the same filters on August 19th, 1894, when they were being supplied with river water containing 1,700 bacteria per c.c.

Thickness of Sand on Filter.	Temperature C.	Number of Microbes per c.c. in Filtered Water.
1 foot	20·3	60
2 feet	19·7	112
3 "	19·4	348
4 "	19·4	72
5 "	19·7	16

It is thus evident that the effect, if any, of thickness of sand varying between one and five feet is completely masked by other influences affecting the passage of bacteria through the filtering material.

Although every facility was willingly afforded me by the East London Water Company, these experiments were carried on under great disadvantages, on account of the difficulty of access to the Lea Bridge Works from my laboratory at Reigate. I have therefore discontinued them, partly for this reason, but chiefly because they are entirely superseded by an exhaustive and exceedingly important investigation carried out at the Lawrence Experiment Station by the State Board of Health of Massachusetts, under the direction of Mr. George W. Fuller, the official biologist to the Board. More than five years have already been spent in the prosecution of these American experiments, and 11,000 samples of water had been submitted to bacterial cultivation up to the 30th of September 1892, the date of the last published report.

The Massachusetts experimental filters were worked at rates up to three million gallons per acre daily, which render the results available for application to public water supplies; and it was found that at these rates, all the disease producing germs which were intentionally, and in known numbers, added to the unfiltered water were substantially removed. The filters were so constructed and arranged as to allow direct comparison of the bacterial purification of water under different rates of filtration, with sand [of different degrees of fineness, with different depths of the same sand, and with intermittent and continuous filtration.

The actual efficiency of these filters was tested by the application of the bacilli of typhoid fever, of *B. coli communis*, of *B. prodigiosus*, and by observations on the passage of these bacilli through the filters. It was found in the case of *bacillus prodigiosus*, that more results, under more nearly parallel conditions, could be obtained than by working only with typhoid fever germs. It was also proved by a long series of experiments, that the life histories of *B. prodigiosus* and *B. typhi abdominalis*, in the water of the Merrimack river at Lawrence are quite similar; that is to say, neither species multiplies, but both continue to live, although in greatly diminished numbers, for at least three weeks, which was a sufficiently long time for all the requirements of the experiments.

During the earlier portions of the year 1893 very large numbers of *B. typhi abdominalis* and other species were applied in single doses to the several filters at different times, and the effluents were examined for several days. It has thus been ascertained, that the species of bacteria above named "can be so grown that, "when placed in the river water along with their culture medium, the numbers of "bacteria of these species equal those of other species originally present in the "water; while the food material added need not increase the organic matter beyond "the limits of variation of the organic matter naturally present in the river "water."

The general plan of the experiments was to apply *B. typhi abdominalis* or *B. prodigiosus* in small repeated doses for 10 hours each day, and to examine the effluent four times daily at the time when the water containing these doses was coming through the under-drains. These results were considered to give a thoroughly reliable test of the degree of bacterial purification effected by the filter, and these are the data which have been largely used in deducing the laws of water filtration. The author of the report remarks, in reference to the degree of bacterial purification effected, that it is to be kept in mind that many of the results were obtained under much more severe conditions than would occur in the actual filtration of a public water supply. Thus, in some cases, the number of germs applied was several hundred thousand per c.c., whilst, in some filters the sand was less suitable than would be recommended for the filtration of a public water supply. These conditions were introduced in order to arrive at the conditions necessary for efficient filtration, but the results so obtained would obviously be less perfect than might otherwise have been secured. Some of the following results were obtained at a rate of 1,500,000 gallons per acre daily of water containing abundance of the bacilli of typhoid fever, and 99·93 per cent. of these bacilli were removed at rates of filtration varying from even two millions to three millions of gallons per acre daily; whilst from 99·89 to 99·98 per cent. of *B. prodigiosus* were similarly removed; this bacillus behaving in regard to filtration, as already stated, exactly like *B. typhi abdominalis*. These

results, as the author remarks, leave no room for doubt as to the efficiency of sand filtration, when properly conducted, as a safeguard against water-carried diseases.

Amongst the subjects investigated by means of these experimental filters were:—

1. The effect, upon bacterial purification, of rate of filtration of water.
2. The effect of size of sand grains upon bacterial purification.
3. The effect of depth of material upon bacterial purification.
4. The effect of scraping the filters upon bacterial purification.

EFFECT OF RATE OF FILTRATION.

The rates of filtration varied from three hundred thousand gallons to three million gallons per acre per day. The microbe used in these experiments was *B. prodigiosus*, and at the rate of three hundred thousand gallons per acre per day, the percentage of bacteria removed varied from 99·932 to 99·998 per cent. When the rate was one million gallons per acre per day the percentage of bacteria removed varied from 99·85 to 99·995 per cent. At the rate of one million five hundred thousand gallons per acre per day the percentage of microbes removed was from 99·81 to 99·99 per cent. At the rate of two million gallons per acre per day the bacterial purification effected varied from 99·85 to 99·98 per cent.; whilst, at the rate of three million gallons per acre per day, the percentage of organisms removed varied from 99·45 to 99·95 per cent. Although these results showed that slightly more bacteria passed the filters at the higher than at the lower rate, the number so escaping removal was in all cases so insignificant as to lead to the conclusion that rate of filtration, within these limits, is practically without effect upon the bacterial purity of the filtered water.

EFFECT OF SIZE OF SAND GRAINS UPON BACTERIAL PURIFICATION.

When the size of the sand grains was 0·2 millimetre in diameter, 99·87 per cent. of the *B. prodigiosus* were removed. When the size of the sand was reduced to 0·14 millimetre in diameter, the percentage of microbes removed was 99·96; whilst with sand 0·09 millimetre in diameter the percentage removed was 99·98. The rate of filtration in these experiments was two million gallons per acre daily.

Here again, whilst it is evident that, with sizes between the limits just mentioned, the finer the sand the higher the percentage of bacteria removed; yet, the differences between these limits are not great. The sand used for water filtration in England is, however, much coarser than any of these sands experimented with.

EFFECT OF DEPTH OF SAND UPON BACTERIAL PURIFICATION.

In these experiments the depth of sand varied from one foot to five feet, and the rate of filtration from five hundred thousand gallons to three million gallons per acre daily. With one foot of sand, 99·935 per cent. of the *B. prodigiosus* was removed when the rate of filtration was five hundred thousand gallons per acre daily. When the rate was increased to two million gallons daily the percentage removed was reduced to 99·88; whilst, when the rate was increased to three million gallons per acre daily, the bacterial purification effected was reduced to 99·47 per cent.

When the approximate depth of sand was two feet 99·982 per cent. of the microbes were removed, when the rate of filtration was five hundred thousand gallons per acre daily. At two million gallons per acre daily, the microbes removed amounted to 99·89 per cent; whilst at the rate of three million gallons per acre daily, the numbers removed were reduced to 99·69 per cent.

With sand of the approximate depth of five feet, the experiments were confined to the rate of two million gallons per acre daily, and the percentage of microbes removed amounted to 99·87 per cent.

It is thus evident, that the depth of material within these limits exerts but little influence upon the percentage of bacteria removed, except at the higher rate of three million gallons per acre daily, in which case the filter two feet deep removed somewhat more than the filter one foot deep. Practically, it may be said that these

experiments indicate that, with any moderate rate of filtration, depth of sand, within the limits just specified, exercises no appreciable influence upon the bacterial purity of the effluent. And this result is quite borne out by the results of my experience gained in the bacterioscopic examination of the filtered waters of the seven companies supplying the Metropolis and drawing from rivers. Thus the New River Company, with 1·8 foot of sand, on the average, in its filters, compares favourably with the Chelsea Company, the sand on whose filters averages more than twice that depth. Placed in the order of thickness of sand on their filters, the Metropolitan Companies range as follows:—Chelsea, Lambeth, West Middlesex, Southwark, East London, Grand Junction, and New River. Placed in the order of efficient bacterial filtration they range as follows:—Chelsea and West Middlesex equal, New River, Lambeth, East London, Southwark, and Grand Junction.

In connection with these comparisons however, it deserves to be recorded that during the whole of the year 1894 the Chelsea Company never once infringed the standard of 100 microbes per c.c.; the West Middlesex and Lambeth only once each, the New River twice, the Southwark four times, the East London six times, and the Grand Junction eight times. Inasmuch, however, as the Chelsea, West Middlesex, and Lambeth Companies admit of only one average sample of their filtered water being taken, they are placed in a more favourable light than the remaining Companies whose individual filters are separately tested.

EFFECT OF SCRAPING FILTERS UPON BACTERIAL LIFE.

The effect of scraping ten filters was investigated at the Lawrence Experimental Station over the period from September 16th to November 27th, when the filters were running under nearly the same conditions before and after scraping. During this time, the number of ordinary river bacteria in the water passed upon the filters averaged 13,600, and the number of *B. prodigiosus*, for the 10 hours daily application, 6,400 per c.c. Many of the results were obtained when the water was passing the filters at the rate of three million gallons per acre daily. The total number of scrapings amounted to 42, and the number of river bacteria in the filtered water three days before scraping amounted, on the average, to 44; the maximum being 109, and the minimum 20 per c.c.; the average per-centage of bacteria removed before scraping was therefore 99·68. During the three days after scraping, the average number of river bacteria in the filtered water increased to 75 per c.c., the maximum being 233, and the minimum 28. Thus the average percentage of bacteria removed during the three days after scraping was 99·45.

There were altogether 32 experiments made with *B. prodigiosus* which, during three days before scraping, was removed to the extent on the average of 2·8 per c.c., the maximum being 13 corresponding to 99·96 per cent., and the minimum zero. During the three days after scraping, the average number left in the filtered water was 6·7, the maximum being 34 and the minimum 0·4; thus 99·89 per cent. of this bacillus were removed on the average.

These results show that there is an increase in the number of bacteria in the filtered water after scraping; and during the following days, the effluent usually contains a greater number than at any other time. It was noticed that the increase was greater in shallow than in deep filters and with high than low rates of filtration; but, even at the time of least purification, there was still an average removal of more than 99·4 per cent. of water bacteria, and of nearly 99·9 per cent. of the *B. prodigiosus*. The bacteriologist (Mr. Fuller) remarks that "with coarser sands than have been employed in these experiments the effect of scraping upon the bacterial contents of the effluent would probably become more marked."

The report of the State Board of Health of Massachusetts for the year 1893 has not yet reached me, but under date of August 14th, 1894, Mr. G. W. Fuller writes: "This latter report will interest you, in that we give results of filtration at rates of "five million gallons (U.S. gallon equal 231 cubic inches) per acre daily and more. "These and later results go to show that filters may be operated satisfactorily at "these high rates, provided a uniform rate is maintained. We also learn that "scraping the surface does not interfere with the bacterial efficiency, provided there

" is no mechanical disturbance of the main body of the sand. These two points, I believe, are of utmost importance in actual practice, and outweigh, to a large extent, differences in size and depth of material and in the average rate of filtration."

The knowledge of sand filtration gained through these very valuable experiments instituted by the Massachusetts State Board of Health, and from my own bacteriological investigation of the Metropolitan Water Supply, affords fairly conclusive data for the guidance of the engineers of the London Water Companies in all ordinary seasons; but, the severe weather, which has recently prevailed in England has brought to light some entirely novel phenomena affecting the filtration of water, which will require to be carefully studied and which are at the present moment engaging my earnest attention.

I am, &c.

E. FRANKLAND.

The Registrar General, &c., &c.,
Somerset House, W.C.

FIRES IN LONDON DURING THE YEAR 1894.

Captain J. Sexton Simonds, Chief Officer of the Metropolitan Fire Brigade, reported to the London County Council that the number of fires attended during 1894 was 3061, being fewer by 349 than the number in the preceding year, but exceeding by 521 the average in the ten years 1884-93. According to this report the lives of 204 persons were seriously endangered, and 82 of these were lost. The numbers of lives lost by fires in London in the four preceding years were 61, 61, 64, and 82 respectively.

The staff of the Metropolitan Fire Brigade at the end of the year was distributed at 57 land engine, 4 floating, 56 hose cart, 7 hose and ladder truck, and 200 escape stations. The number of fire engines at these stations was 155, an increase of two upon the number in the previous year; 9 were floating steam engines, 51 land steam engines, and 95 manual engines. The authorised strength of the brigade was 791 of all ranks, including the chief officer, second officer, and the superintendents. The cases of injury occurring in the brigade during the year were 115, against numbers ranging from 142 to 95 in the ten previous years.

Number of Fires and of False Alarms attended during the Eleven Years 1884-94, and in each Month of 1894.

YEARS AND MONTHS.		TOTAL CALLS.	FALSE ALARMS AND CHIMNEYS.	FIRES.				
				Serious	Slight.	Total.	Per-centages.	
							Serious.	Slight.
1884 - - -		2806	517	194	2095	2289	8·5	91·5
1885 - - -		2851	581	160	2110	2270	7·0	93·0
1886 - - -		2853	704	151	1998	2149	7·0	93·0
1887 - - -		3059	696	175	2188	2363	7·4	92·6
1888 - - -		2693	705	121	1867	1988	6·1	93·9
1889 - - -		3131	793	153	2185	2338	6·5	93·5
1890 - - -		3546	991	153	2402	2555	6·0	94·0
1891 - - -		4164	1272	193	2699	2892	6·7	93·3
1892 - - -		4449	1303	177	2969	3146	5·6	94·4
1893 - - -		4824	1414	180	3230	3410	5·3	94·7
1894 - - -		4111	1050	151	2910	3061	4·9	95·1
1894.	January - -	402	116	12	274	286	4·2	95·8
	February - -	346	109	14	223	237	5·9	94·1
	March - - -	350	105	17	228	245	6·9	93·1
	April - - -	331	91	15	225	240	6·2	93·8
	May - - -	344	85	19	240	259	7·3	92·7
	June - - -	295	65	8	222	230	3·5	96·5
	July - - -	335	83	12	240	252	4·8	95·2
	August - - -	324	90	9	225	234	3·8	96·2
	September - -	290	56	11	223	234	4·7	95·3
	October - - -	311	69	14	228	242	5·8	94·2
	November - -	295	66	7	222	229	3·0	97·0
	December - -	488	115	13	360	373	3·5	96·5

